THE

VETERINARY JOURNAL

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Editorial.

DEPARTMENTAL REPORTS.

ONCE a year we receive the "Report of the Proceedings under the Diseases of Animals Acts, the Markets and Fairs Acts," &c. &c., and we at once turn to the part of special interest to us,—that is, the Report of the Principal Veterinary Officer. To our utter astonishment we find he is dumb on the subject of paramount interest—swine fever, and the only conclusion we can come to is that he has nothing more to say on the matter than he said last year, or that the control of this disease is no longer one for the Veterinary Department, but one for the Police Department. Heaven help us and them if such is the case. Surely there must be some reason for the continued prevalence of the disease in the country, and some great inefficacy in the methods adopted with a view to stamping the disease out. From our own experience, which is a large one, we are, and for a long time have been, of opinion that rats have a good deal to do with the spread of the disease. We have known places cleaned out, disinfected, and kept empty for months (with a consequent disappearance of rats), but on the restocking with healthy pigs there has been a reappearance of the rats and a recurrence of the disease. Is it not possible that the *rat-runs* require digging out and destroying, so that all contagion in *them* may be completely got rid of, before we have a disappearance of these too frequently recurrent outbreaks?

It is not pleasant to learn that glanders is increasing in the country, and there is doubt that it will continue to do so until all animals which react to mallein are destroyed, and proper compensation given for them. We are of opinion that careful inspection should be made of all horses from America, as we know that there is an enormous amount of glanders in that part of the world, and the use of mallein as a premonitory is as well known as is the use of tuberculin in the cow for the same purpose.

We are glad to notice that rabies has almost entirely disappeared, and congratulate the Board in its successful suppression of the disease, and we sincerely trust they will never relax the severity of their measures for preventing its reappearance.

Mr. Cope gives to the profession some beautiful plates showing

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the lesions of foot-and-mouth disease, and a most lucid description of the disease in some of the farm stock. It might be mentioned that the disease sometimes affects man, but rarely.

One point more: when the Board of Agriculture issues regulations in reference to anthrax, why does not its Report contain some reference to this disease, which, without doubt, is becoming more prevalent each year? The fact of the matter is, that having two Reports, one from the Principal Veterinary Officer and another following by the Assistant Secretary, is awkward and confusing. Let us have a single Report, and that by the Principal Veterinary Officer, who shall speak for his Department. What have we to do with the opinion of the Under-Secretary about the evidences of the mysteries (page 29) of the course of a disease? There will never be any confidence in the Board we fear till this is done.

Original Papers.

REMOUNT AND TRANSPORT WORK IN AMERICA.[1]

BY W. OWEN WILLIAMS, F.R.C.V.S.

PERHAPS a rough outline of the handling of horses and mules in the United States of America by our Remount Department may be of interest to the members of the Association. Of course in connection with the purchasing I know nothing, nor do I know what the prices paid were, but that is a matter which hardly concerns us. You may take it from me, however, that the head of the Remount Department there during my stay knew well how to make a bargain, and took care that no one received more than market value for his bunches of mules or horses. In fact he could drive a bargain as well as any Aberdonian. Not only did he pit the dealers in towns against each other, but he pitted the dealers in certain States against those in others, and consequently didn't pay too big a price for his stock. So well were matters arranged, that when an order that so many thousands of mules and horses were wanted by such and such a date, to sail in such and such ships on such and such dates, I never remember our being without the stock ready and healthy to ship from New Orleans, except once, and that was not due to the want of supplies, but due to there being a great amount of sickness present among the horses, and to the season, being zero and blizzards in the North, and torrential rains and muggy heat with us in the South.

Sellers frequently paid visits to New Orleans in their endeavours to obtain contracts for bunches of stock, and in their cases none needed to apply unless they entered into agreements and found securities that, provided they obtained orders, they would fulfil them, whether at a profit or a loss, but by hook or by crook they had to provide the stock in order and in sufficient number, and none would be paid for unless duly purchased by the officials of the department.

Veterinary-Captain Smith would sometimes buy two or three hundred a

[1] Abstract of a paper read at a Meeting of the Yorkshire Veterinary Medical Society on Friday, 5th July.

day—day after day—in different parts of the States, and would travel from place to place during the night, and on Sundays. He was the most indefatigable man I ever knew or knew of.

As animals were purchased they were at once branded, and they then became our property. It was the usual custom at first to leave them in the pens or yards of the dealers until near the time they were wanted at New Orleans for their respective ships, but later on we took large grazings and kept them there, fed them on corn, and then brought them to New Orleans about ten or twelve days before they were to be shipped. This process assisted in accustoming them to a change of climate, and also gave them condition. It was the custom to buy animals to go in certain ships —for instance 1000 mules would be bought for the "Iona," 900 horses for the "Cervena," or perhaps 1000 mules and 250 horses for the "Milwaukee," and when we knew that these ships were coming due, we would order down their cargoes.

I might mention here that we always had a variable number of animals in hand in New Orleans, which should have gone on other ships, but owing to accident, illness, or a deficiency in the capacity of some ship, they remained in New Orleans and were used to fill up vacancies, owing to illness, &c., in fresh cargoes. The stock always came what to us Britishers seem very long distances, say 1000 miles from up country or out West. They came in railway cars which held from twenty-five to twenty-eight horses, cobs, or mules. These cars seem to have been specially designed so as to expose the animals' legs to the hot or cold winds and draughts, and to close in all the foul air at the top and half stifle the animals. Many of the cars have hay-racks and water-troughs, which are worse than useless, unless very carefully looked after.

The Railway Companies were keen competitors for the traffic, and all the trains (special ones always) were run at express speed. Arrangements were made to unload the stock for a few hours in the middle of the journey so as to feed and water them.

The great disadvantages of this were two—namely, animals being injured in the loading and unloading, and animals perhaps occupying pens or stockyards which might have held unhealthy stock, but we took every precaution to have these places reserved for *our* stock and to have them kept thoroughly clean. Cleanliness is a thing unthought of and considered quite unnecessary for animals, at any rate in the southern parts of the States, as far as I saw.

As the trains arrived with their stock, they were unloaded at one or other of the stockyards, which were always specially cleaned, limewashed, and ready for them, hay, corn, and bran, and plenty of water with hyposulphite of soda in it being also there for them. By-the-bye, in Louisiana, or rather New Orleans, the natives all swear by the goodness of the water of the Mississippi, and the longshoremen and niggers drink it freely; in fact in some parts of the town they have nothing else to drink —well—! It is brown in colour, has a smell, the deposit in a tumblerful is quite half-an-inch thick and quickly decomposes—and—that's a sufficient description. I believe that what is used for drinking by the better classes is just the same, but has had its solid particles precipitated by iron or something, though in the hotels it is filtered, but *never* safe to drink undiluted.

The stock from the various purchasing stations as it arrives is kept by itself as much as possible. For instance, all Texan mules would remain at

the T. and P. Stockyards; Missouri mules would go to Government Yard; Texan cobs would go to Slaughter-houses; Missouri horses to Commercial Street Press, and so on.

Either at or in the immediate neighbourhood of these large places, we had smaller places which were used as sick lines, and at them we kept supplies of medicines, &c. We also had a hospital (Richard Street) for horses, and a suspect depôt for mules (No. 8). All of these places were in telephonic communication with headquarters. Most of these places, when we rented them, had to be fitted up for our purposes, as they were not built for such, and we often had considerable trouble in getting a good water supply, efficient drainage, and ventilation.

After the stock had been unloaded into the yards, we carefully inspected each animal, and with the aid of the men cut out all that seemed at all lame or unhealthy, and sent them to the sick lines for treatment. This process was gone through daily, so that, when the time came, we had one lot of healthy stock ready to ship.

Tetanus is a very common disease in Louisiana, and is seen in a benign and acute form. Our animals, which had a good deal of knocking about one way and another, were sometimes injured by rails or sharp pieces of timber, or by picking up pieces of wire, and were consequently very liable to be affected with tetanus, but we adopted the precaution of injecting anti-tetanin, and *never had a single case of tetanus*, which says volumes for anti-tetanin, and from my experience there I would strongly recommend all practitioners in "tetanus" areas to use the anti-toxin. We started a gang of blacksmiths, who were continually at work among the stock attending to their feet; many of the mules had much grown feet, and had heels and toes on their shoes. We also started a gang of men with machine clippers, and half-clipped the stock before putting them on board ship, which precaution we found of great value, as the stock at the beginning of the year had very heavy winter coats on, which soon became saturated with perspiration after they had been in our climate for a day or two, and would have tended to encourage attacks of pneumonia, &c. We also did it because it made the animals much cooler and more comfortable when on board ship and crossing the line.

We had a small gang of men with a pump, with which they constantly went round the lines, spraying the walls, &c. with carbolic acid and lime-wash.

You would probably notice that a deputation of those interested in the horse importation from America to this country recently waited upon the Minister of Agriculture, and begged of him to take measures to insure the healthiness of the horses arriving in this country from America. The Minister—Mr. Hanbury—did not seem to view the matter at all seriously; but it *is* a serious matter, as I can assure you of two facts, first, that there is an enormous amount of contagious disease amongst horses in America (I speak comparatively), and secondly, no precautions worth speaking of are adopted to eradicate these diseases.

I will ask one question, which perhaps will be a hint to interested parties. What becomes of the enormous quantity of mallein which is prepared in America?

To give you an instance of the little regard paid to the proper care of horses in America, I have it on good authority that a bunch of horses bought by the American Government at the time of the recent Spanish

War, which cost 125,000 dollars, though not even used for any military purposes, were so much depreciated in value that what were left of them sold for 25,000 dollars! a cash loss of 100,000 dollars, not to speak of the food, &c. wasted. Personally, I should be inclined to quarantine all imported horses, unless the veterinary inspectors at the port of disembarkation were quite satisfied that they were free from contagious and infectious diseases—not only glanders and farcy, but influenza, strangles, and skin disease. This is a digression for which I crave forgiveness, but the matter is of so much importance that I couldn't pass it by without some reference.

The principal diseases we had to contend with in New Orleans were those which so frequently affect animals which have been bunched together in unhealthy places—pneumonia, pleurisy, pleuro- and broncho-pneumonia, strangles—simple and bastard—and purpura hæmorrhagica.

As the majority of our patients were over five years old, it would be considered rather unusual to see much strangles, but we had scores upon scores of such cases, and I inserted more tracheotomy tubes there than I had done in twenty years previously.

All of these animals had been in the best of health and in regular work prior to being gathered in stockyards and pens for inspection, and no doubt they contracted the diseases in these places.

I fear I weary you, and will proceed to other matters. We have now got our animals selected and about ready for shipment, and the good ship (a British one, of course) has just come up the river. As soon as she is unloaded, or has emptied out her ballast, or even before that is accomplished, we go on board and proceed to inspect her from stem to stern and from bridge to bilge, and at a time when she is empty, at anchor, and, if possible, when there is plenty of light, but not too much wind blowing.

Before commencing this inspection copies of the plans of the ship should be procured, or rough plans made, and on these, which should be in triplicate, can be marked the places where stalls or pens may be fitted, and where sick-boxes have to be built, such as on the hatches and on the poop and near the bridge.

As one proceeds, notes must be taken of all the places, such as shafts, port-holes, ventilators, and doors which give entrance or exit to good and foul airs, noting whether such currents are in action, for if there be no currents through those places artificial aid must be introduced in the shape of fans driven by machinery. It must be remembered that good ventilation is of the utmost importance on board a ship, and must be efficient, not only when she is at sea and in a head wind, or having a wind blowing on her quarter, but also when she is running before a fair wind or when lying at anchor.

In addition to the fans, shafts must be constructed of wood to conduct the air to the remotest corners of all parts of the ship where horses have to stand. These shafts should have slides or revolving doors in them which can be fixed to regulate the amount of air passing through them, and also to cause alternations in currents.

Wind-sails must also be provided, twenty to thirty in number, and in addition to them should be made sleeves of canvas with hoops in them, which may be attached to the lower ends of the wind-sails, and so used for flushing the holds and other parts. Wind-scoops of galvanised iron should be made to fit each porthole, and as many doors as possible with safety should be left open.

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The next proceeding is to find out what her water-tanks' capacity is, and calculate how much fresh water she can carry without having to condense; also note how much she can condense per day.

As the tanks' capacity is usually given in tons, it is usual to reckon that each animal must have an allowance of one twenty-eighth of a ton or eight gallons per day; so that one must multiply the number of animals by the approximate number of days on the voyage, making full allowance for delays owing to head-winds, storms, &c., and dividing that sum by twenty-eight gives the number of tons of fresh water that must be taken on board.

It may happen, however, that the transport has not sufficiency of tanks to carry the full quantity of water, and in such a case it will be necessary to condense.

Condensing should be commenced early on the voyage, and the chief engineer should have no difficulty in using say one-sixth of No. 1 tank, and then filling up with condensed, and, passing on to No. 2 tank, use say one-fifth if necessary, and fill up with condensed. If this be done with the largest tanks there should be no difficulty in obtaining a sufficiency of water for a long voyage, none of which water will be in greater proportion than one of condensed to four of pure water.

Arrangements must then be made as to the placing of at least one hydrant in each horse compartment and on the main deck, on which there may be several hundred horses in three or four lines, then numerous hydrants must be placed. In some of the smaller holds perhaps only one or two may be needed.

Special precaution must be taken that no waste occur, as that may result in terrible disaster.

The next thing will be to see that a pharmacy is erected in a convenient part of the ship, so that medicine can be obtained without much trouble; the neighbourhood of the bridge is most suitable. The pharmacy should be large, so as to store *all* the drugs, and well lighted night and day, fitted with a stout door and a good lock to it.

As regards drugs, that is a matter of choice; but one thing I would point out, and that is, take all drugs, as far as possible, in such a form so that they can be easily administered, say, by subcutaneous injection or in food or drinking water, as it is often a difficult matter to give animals drenches when on board a rolling ship or when they happen to be standing 'tween decks, which is usually not sufficiently high to enable one to get the horse's head high enough up.

There are many other things of great importance, such as the inspection of hay, corn, bran, &c., prior to its being placed on board, in connection with the transport of animals by sea, but I have purposely only mentioned a few of the preliminary ones, so as to indicate how very necessary it is that a skilled person, and particularly a veterinary surgeon, should be in charge of such a department.

Now, having our ship ready and our stock ready, we proceed to load it.

Almost every one of the animals sent from New Orleans was walked on board. A very few indeed were slung on board, either in slings or in boxes, but we managed to so arrange the shoots from shore to upper or lower decks or to cattle doors, and alley ways from them to other shoots ("chutes") down the holds, that we had a minimum of handling and work, and it was no uncommon thing to load at the rate of 250 in an hour.

It is hardly necessary for me to enter into the detail of a last inspection

of the stock—a walk through the ship to see that pads were at all corners and low places, bars at inclines, no nails sticking out, &c. &c., and the arrangements with the railway companies—but I must say one word, and it is this: before loading commences, the ship must be most carefully moored to the wharf, allowances being made for the gradual sinking of the ship as she gets her cargo on board, and full play given to the shoots from shore to ship. As the animals enter the shoot from the car, they are blocked off so as to prevent rushes and crushes, and at the same time they are haltered. When they are allowed to go forward the first one may have to be led, and the others follow like mules. As each mule goes on board his halter chain or rope (rope is best) is caught by a nigger, and the mule is led to his allotted place. These gangs of niggers at each shoot are usually thirteen in number with a gaffer, so that a gang takes two turns to empty a car, then the train moves along, and other cars come opposite the shoots. We only had one fatal accident whilst loading, and that was a horse that took a mad jump and split his skull against the coaming of the hatch.

I find that 97·15 per cent. of the stock shipped whilst I was in America was landed alive in South Africa. The War Office considers 95 per cent. a good average.

The Lecturer showed models of ships fitted for transport work, plans of ships and of pens, and photographs of many subjects of interest pertaining to the work.

STATISTICAL VETERINARY-SANITARY REPORT OF THE PRUSSIAN ARMY FOR THE YEAR 1900

(From *Militär Wochenblatt*, No. 70, of August 14, 1901.)

THIS Report is issued somewhat earlier than usual. The contents are again full of interesting matter, but as we can only lay stress on the most important points, we must refer those of our readers who would desire to go deeper into the subject of the document itself.

The total strength of military horses was 81,039, of which number 32,996 (=40·71 per cent.) came under treatment. This is an increase of 6416 cases as compared with the preceding year, mostly due to cases of contagious and infectious diseases. The largest number of cases occurred during the third quarter.

Of the animals under treatment 30,399 (=92·12 per cent.) were cured, 320 (0·97 per cent.) were cast, 1148 (3·48 per cent.) died, and 368 (1·11 per cent.) were destroyed; thus 1836 horses (5·58 per cent. of cases, and 2·26 per cent. of the strength) were totally lost to the service. This exceeds the losses of the preceding year by 284.

Glanders, which disease was formerly of such frequent occurrence, particularly after the war of 1870-71 in consequence of importation from outside sources, was, thanks to the operation of the Army Veterinary Regulations, almost entirely extinct. While this scourge claimed 13 victims during the preceding year, and 1 in 1898, the army lost 52 animals through this cause in the year under review. The largest proportion (47) occurred in the 8th Uhlan Regiment, in one section of which 26 horses were found to be infected, while 21 others were either not suffering from

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the disease or their cases were doubtful. The other five cases occurred in various other units. In one instance the infection was traced to a stable in billets. Mallein inoculation is frequently resorted to as a means of proving the existence of glanders in suspected animals: this process is claimed to cause an increase of temperature in authentic cases, while not affecting the temperature of sound horses. The year's experiences have not, however, established that view. In some cases a great increase of temperature occurred, but otherwise no indications justifying approximate judgment, either for or against the presence of the disease.

1618 horses were treated for pleuro-pneumonia, as against 2301 in the preceding year, and 3265 in 1898. This disease, which was gradually increasing since 1893, seems to have reached the highest point in 1898, and appears now, let us hope for good, to be on the decline. The cases of the disease ran as follows:—

1893	798
1894	1306
1895	1407
1896	2277
1897	3116
1898	3265
1899	2301
1900	1618

Of the cases dealt with in the report year, 1498 were cured, 70 died, 1 was destroyed; 49 remained under treatment at the end of 1900.

The largest number (1019 cases with 43 losses) occurred during the first quarter, the fourth quarter having formerly been the most fatal. The largest number—exceeding 100 each—occurred in the II., XI., XV., XVI., and XIV. Army Corps. Climate seems to have no appreciable influence. One Army Corps only, the XVII., was entirely free of this disease.

The following may be mentioned as to the experiences gained in the course of treatment:—

As to the origin of the disease nothing definite could be ascertained in the majority of cases, although it was possible in isolated instances to trace it to contact with agricultural animals, or to importation by remounts. As regards the question of letting the disease run through the stables, or of isolating infected cases, this seems to have been finally settled by the experiences gained during the last few years in favour of immediate isolation. This measure has been, so far as a decisive judgment is possible, in ten cases a decided success; the one experiment in letting the disease take its course (in the 5th Hussar Regiment) did not result in curtailing the duration of the epidemic, and the disease even took a more severe form in the course of the experiment than had been the case at the beginning, when isolation was in force. It also appears that the practice of bivouacking infected units has rather an injurious than a beneficial result. That bivouacking does not in any case protect against an outbreak of the disease was proved by the 2nd F.A. Regiment, a section of which was specially kept in bivouac after the manœuvres in order to keep it free of disease. Having already spent 24 days in bivouac, the disease made its appearance, and on the 48th day (the 28th day after the last case) a further case occurred. Bad, especially moist cold weather favours the spread of the disease, and causes the worst attacks. It is also a well-known fact that

bivouacking injuriously affects horses, and lessens their power of resistance to disease. For this reason alone such a measure must be considered irrational, but good results may ensue if not only the sick horses of a unit, after passing through an infection, but also the sound animals, are picketed outside in good weather during the daytime.[1] It is a matter of course that the stables cannot have too much fresh air admitted, and that they should undergo thorough cleaning and disinfection. The present state of our knowledge of this disease would seem to commend "isolation as soon as possible, permanent abidance during favourable weather in daytime in the open air for both sick and sound horses." As after effects of pleuro-pneumonia, which make this disease so particularly dangerous, cardiac weakness, rattling in the throat, inflammation of tendons and ligaments, and inflammation of the eye, are principally noticed.

New experiences regarding the treatment of the disease were not made; there are no medicinal means of reducing the period of the disease or of preventing it, but the course of the disease and its results may be influenced by creating the best possible hygienic conditions—pure air, appropriate treatment. Priessnitz bandages have been used with advantage in all cases of disease of the pectoral organs, and appear to have had a better effect than embrocation of spirits of mustard.

Regarding protection by inoculation, from which such great results were formerly anticipated, exhaustive experiments do not appear to have led to authenticated favourable results, but have rather caused mistrust of the process.

It is affirmed that two inoculated horses of the 3rd Hussar Regiment, which were subsequently diagnosed as not suffering from the disease, fell sick in consequence of the effects of inoculation, probably owing to impurities in the injected blood. Large abscesses and swellings frequently appear in the place where the injection has been made, and incapacitate the animals for duty. "Inoculation on a large scale (518 horses) was resorted to in the 21st Dragoon Regiment without appreciable effect on the spread of the disease, with, however, the disadvantage of forming large swellings and abscesses in the cases of 195 horses, which caused some of them to be unfit for duty for as long a period as fourteen days.

Cases of erysipelas—the disease related to pleuro-pneumonia, though less dangerous—increased greatly during the year—4325 horses being affected as against 861 in 1899, 2066 in 1898, 1481 in 1897. Only one horse died, and one was destroyed. The disease prevailed principally during the third quarter.

There were 300 cases of strangles, as against 246 in 1899 and 115 in 1898; two horses died. Abscesses of the laryngeal glands were of frequent occurrence; 53 horses were treated for tetanus, of which number 34 died. The principal cause was blood-poisoning of injuries; 34 horses died of cerebral inflammation, great heat combined with over-exertion being the cause in most cases.

Acute catarrh of the larynx and of the windpipe, for which 527 horses were under treatment (172 in 1899 and 757 in 1898), was due to infection in 420 cases, 284 cases occurring in the 3rd Uhlan Regiment. Only one animal died from this cause. 58 horses suffered from pulmonary inflammation, of whom 44 were cured.

[1] Care should be taken that horses do not take up sandy soil while in the open, as this would cause bad attacks of colic; grazing, if obtainable, would be preferable.

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Colic again claimed the most victims of all the diseases of the digestive organs. 3746 cases were treated, as against 3082, 3519, 3413, and 3509 in preceding years. This shows a fairly constant average; the deaths from this cause were 528, 450, 462, 478, 449, and 496 respectively. Most cases again occurred during the fourth quarter. Among the inducing causes were the eating of wet and unclean bedding, eating of infected food or of fodder covered with hoar-frost, cold, licking up of sand, eating mouldy bread, maw-worms, over-exertion, and want of exercise. Although it is a generally known fact that the number of cases brought on by eating unclean bedding may be reduced, or the course of the disease simplified by additional clean straw, hay, and the occasional issue of a little salt, even by frequent watering, which entails no cost whatever, such precautionary measures seem to be too little resorted to. This discloses want of care in the treatment of horses which should be remedied. Particularly as it appears certain that a considerable number of horses is lost through swallowing grit, care should be taken to prevent men bringing it into the stables on their boots; and the practice of filling up depressions in rear of the horses (the gutters); as recommended in the Regulations for Barrack Buildings of January 6, would seem to be a dangerous expedient.

596 horses, as against 440 in 1899 and 471 in 1898, were treated for saddle and harness galls; four were cast, and one died. The galls caused by stuffed saddles had their seat mostly on the withers. The treatment consisted in the application of, first, cooling appliances, then moist heat, Priessnitz bandages, massage, resolvents.

4039 cases of inflammation of tendons and ligaments were treated, as against 3475 in 1869 and 3322 in 1898. Total decrease from such causes —39 horses. In fresh cases the cooling method—cold bandages, cold water bandages, &c.—were first resorted to, followed in the course of two or three days by massage, resolvent applications, and Priessnitz bandages. Only later, when these means were found little successful, resolvents and hot irons were used. This shows that the treatment became more rational and natural; there was a time when it was believed imperatively necessary to resort the slightest cases of this nature at once to blisters and even to the red-hot iron. There were even enthusiastic adherents of the latter method who advocated firing of the sinews as a precautionary measure.

The Report as a whole leaves the impression that, probably owing to the more strenuous exertion demanded of horses, an increase has taken place in many internal and external disorders which cause exhaustion and waste of horseflesh.

LOOKING BACK.[1]

BY JOHN BLAKEWAY, F.R.C.V.S., BIRMINGHAM.

GENTLEMEN OF THE MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION,—On this the first meeting of the new year of our Association held in the twentieth century, it is my duty as your President for the year to deliver the customary inaugural address. In doing so I feel the great honour you have conferred upon me, and also the responsible duties of the office, which are added to by the fact that my predecessors have been men endowed

[1] Presidential Address read at a meeting of the Midland Counties Veterinary Medical Association on May 15th.

with great abilities, not only as members of our profession but also as men of education and industry—men who deservedly stood, and those remaining now stand high in our profession, and whose opinions were and are valued, not only by their employers but by the profession, which is the best test of their worth. I therefore beg you to bear with and assist me in my humble endeavours to follow in their footsteps in the performance of the duties that devolve upon me.

First of all I congratulate you upon the choice you have made in selecting the other office-bearers, who, I know, will heartily unite with you and me in using every effort to further the interests of the Association and the elevation of the profession.

When I felt the responsibility of compiling an inaugural address, my first intention was to look up all the available literature referring to the efforts of my illustrious predecessors and draft mine upon similar lines. On second thoughts—and I am quite sensible to the fact that the old adage, which says they are the better, does not apply in the present case—I decided to take a line of my own; to ignore the form usually adopted on these occasions, and simply sketch the origin and history of the Midland Counties Veterinary Medical Association, leaving all professional politics in the hands of those more competent to deal with them.

In the first place, I must say that many times during the period you have honoured me with the care of your finances I have taken great exception to our title, which is composed of no less than forty-three letters. I question if we have any claim to the word "medical" at all; anyway I have not come across it, either in the Veterinary Surgeons Act or either of our Charters, and I suggest "The Midland Veterinary Society" is all that is necessary.

Another point that has occurred to me is the institution of a life composition in the place of the annual subscription for those members who may desire it; a course adopted by other influential societies, viz., the Royal Agricultural Society, the Victoria Veterinary Benevolent Society, and the Birmingham and Midland Counties Agricultural Society. Being a life member of them all, I appreciate the advantage of one payment. The Royal Agricultural Society has an annual subscription of £1, and a life composition of £15. The Birmingham Agricultural and Exhibition Society annual subscription of £1 and life payment of £10. The Victoria Benevolent Society, annual subscription 10s. 6d., life membership 10 guineas. The adoption of this suggestion would, of course, necessitate a certain fund being invested to secure a sufficient annual income for the expenses of the Society.

I have yet another item to mention, and that is, a Society library might with advantage be instituted for the benefit of our members, and considering we have in hand ample funds for supplying a library with many valuable books of reference, I think it worth consideration. With these few preliminary remarks I will proceed with a brief sketch of our history.

THE FIRST VETERINARY MEDICAL ASSOCIATION.

Prior to 1851 the only veterinary association in existence in this country was the Institution held in the Theatre of the Royal Veterinary College, and known as the Veterinary Medical Association—founded 1836. The first report I have been able to peruse was published in *The Veterinary*

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Record for 1849, the meeting being held on October 31st, 1848, in the Theatre of the Royal Veterinary College, London. The Association had then been in existence twelve years. The report goes on to say: The rules of the Association having been read the following officers were elected for the present session—President, Professor Spooner; Treasurer, Professor Simonds; and among the twelve vice-presidents I notice the name of the present Sir George T. Brown. Secretary and Librarian, W. J. T. Morton.

This Association enjoyed an active existence for about forty-five years, when in 1882 it was succeeded by the Royal Veterinary College Medical Society, whose first President was the late Professor Robertson. This being practically a teachers' and students' Society is, I believe, serving a good purpose, and in a flourishing state at the present time.

I have no doubt old members of the first Veterinary Medical Association would read with interest and pleasure the report of the Council meeting of the Victoria Veterinary Benevolent Fund, published in *The Veterinary Record* for February 2nd, 1901, at which meeting Professor Pritchard, the sole survivor of the trustees of the old Veterinary Medical Association, handed over to the Victoria Benevolent Fund the substantial sum of £200 : 1 : 2, which I consider a very satisfactory termination of the pioneer Veterinary Association of this country.

It may not be known to all present that the late Mr. Thomas Greaves, of Manchester, first made public the idea of forming provincial Veterinary Medical Associations in England. In December 1851 he called together the veterinary surgeons of Manchester, with a view to forming a society or club. This only numbered twelve members and did not live long. Its first president was a Mr. John Lawson, of Manchester, and the next Mr. P. B. Ferguson. I don't think they had another, and the society died a natural death.

The next move seems to have been made by Mr. Warne Raddall, of Plymouth, who addressed a letter, dated January 12th, 1855, to *The Veterinarian*, urging the desirability of every county inaugurating an Association. Although this suggestion was warmly commended in a leader in *The Veterinarian* at the time, nothing seems to have come of it until the West of Scotland Veterinary Medical Association was established in Glasgow, July 1858: this was the second. In 1861 another was inaugurated at Aldershot: this was the *third*. Then the Lancashire, December 1862, the *fourth*. Then the Yorkshire, October 9th, 1863, the *fifth*. The North of England, December 1863, the *sixth*. Then the Liverpool, August 1864, the *seventh*. The Central Scotland at Perth, April 1865, the *eighth*. Then the West of England, July 1865, the *ninth*. The Midland Counties, March 23rd, 1866, the *tenth*.

In due course others were established, and prominent among them the North of Scotland, February 1868; the Eastern Counties, September 1868; the Irish Central in 1869; the Central Veterinary Medical Association, July 28th, 1870; the National Veterinary Association, on Friday, October 7th, 1882, the first meeting being held on Tuesday, 8th May 1883.

THE FOUNDING OF THE MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

As before stated, our Association was formed on March 23rd, 1866, and

the following account of our first meeting might, I thought, prove interesting:—"At a meeting of the members of the veterinary profession held on Friday, March 23rd, 1866, at the Midland Hotel, Derby, for the purpose of forming a Veterinary Medical Society, the following gentlemen were present: Mr. King, Melbourne (in the Chair); Mr. Garrard, Ticknall; Mr. Leech, Bakewell; Mr. Ison, Atherstone; Mr. Reynolds, Mansfield; Mr. Pyatt, Nottingham; Mr. Barker, Bolsover; Mr. Statham, Sudbury; Mr. Cave, Nottingham; Mr. Bailey, Senior, Leicester; Mr. Revill, Ilkeston; Mr. Statham, Derby; Mr. Webberley, Castle Gresley; Mr. Taylor, Senior, Nottingham; Mr. Rossell, Sandiacre; Mr. Flower, Derby; Mr. Aulton, Spondon.

Letters were received from several gentlemen whose engagements prevented their attendance at the meeting, expressing their intention of becoming members. It was unanimously resolved that a Veterinary Medical Society be formed forthwith, to be called "The Midland Counties Veterinary Medical Association."

The following gentlemen were elected office-bearers of the Society:—President, Mr. C. Taylor, Nottingham; Vice-Presidents, Messrs. H. Pyatt, Nottingham, W. Garrard, Ticknall, A. Statham, Derby; Treasurer and Secretary, Mr. T. Cave, Nottingham.

I do not intend to weary you with a detailed account of the many meetings of this useful Association, but simply to notice in passing any item of importance and interest occurring during the early period of its existence. However, I consider the brief remarks of its President at the first meeting have been so fully justified that I venture to quote them in detail: The President remarked, "I think we must admit that in these meetings will be combined the elements of union, which is strength, and an onward progress in the veterinary art and science, and they will, there is no doubt, prove the means of adding to that harmony and concord which ought ever to exist among us as a body, whilst they will also afford opportunities for that freedom of communication upon professional subjects which cannot fail to be beneficial to all connected with the profession, and at the same time will tend to the gradual disappearing of those little jealousies which ought never to exist, ultimately resulting in unity of sentiment and interest."

The opening meeting of the Association was held at the Midland Hotel, Derby, on Tuesday, July 3rd, 1866, the President, Mr. C. Taylor, in the chair, who delivered an interesting inaugural address touching upon many points of importance to the profession, and among them alludes to Dr. Richardson's valuable discovery of local anæsthesia as a substitute for the inhalation of chloroform in surgical operations, which had been recently brought before them. He also states that his first object in entering as a pupil at the London College, upwards of fifty years before, was, on being duly qualified, to obtain an appointment in the Army, but on being disappointed in this he embarked in private practice, which step he had no reason to repent taking. He also says—"Shortly after commencing I had an offer of partnership from the late Mr. Lacey, who was well known in the Midland Counties as a sporting man, &c. and a fortunate breeder of thoroughbred horses, among others having bred the celebrated horse "Birmingham," who won the St. Leger in the year 1830.

The next meeting of the Association was held at the Hen and Chickens Hotel, Birmingham, on Thursday, 18th October 1866; the President occupied the chair. After the transaction of other business, the

following gentlemen were elected members: Messrs. E. Stanley, Burley, Hunt, Price, Junior, Blakeway, Toll, Perrins, Harber, Markham, Walters, and Litt. Mr. T. Greaves read a paper on "Disease of the Frontal Sinuses and Teeth of the Horse, coupled with Quidding."

Another meeting under the presidency of Mr. C. Taylor was held at the Lion Hotel, Nottingham, when Mr. R. S. Reynolds, late of Mansfield, gave an address on "Tetanus in the Horse." He (Mr. Reynolds) was unable to be present, having recently been appointed veterinary surgeon to the Corporation of Liverpool, so the essay was read by the Secretary.

At the next meeting held at the Stag and Pheasant Hotel, Leicester, on April 16th, 1867, Mr. King, of Melbourne, was elected President, and at this meeting the office of treasurer was separated from that of secretary. Mr. Flower, of Derby, was elected as treasurer; Mr. Cave, of Nottingham, being re-elected honorary secretary.

Mr. John Carless, of Stafford, next occupied the Presidential chair. He was supported by Messrs. Cartwright, Stanley, and Blakeway, as vice-presidents, and Mr. Barry as honorary secretary.

At a meeting held at the Great Western Hotel, Stafford, in April 1869, Mr. Carless was unanimously re-elected President; Messrs. Markham, of Rugeley, Litt, of Shrewsbury, and Dayus, of Dorrington, Vice-Presidents. Mr. Litt read a paper on "Purpura Hæmorrhagica and Scarlatina in the Horse." Signed William Barry, honorary secretary, of Lichfield.

The next meeting (the annual) was held at the Hen and Chickens Hotel, Birmingham, in July 1869, the President (Mr. Carless) in the chair, and among those present I noticed the President R.C.V.S. (T. Greaves, Esq.), who is an Honorary Associate. That, gentlemen, is the first record I have come across of the formation of Honorary Associates of this Association. Some of the minutes of this meeting are to me interesting, and I venture to quote them: "A great number of fines having been incurred at former meetings by members not giving notice of non-attendance to the Secretary, and none of these fines having hitherto been collected, the subject was considered at this meeting. It was moved by Mr. Perrins, and seconded by Mr. Blakeway, 'that at each future meeting a strict account be kept of fines incurred, and that they be regularly collected by the Treasurer; and that fines hitherto incurred be excused.' This was agreed to."

It was proposed by Mr. Markham, and seconded by Mr. Blakeway, "that £2 be expended out of the funds of the Association at each meeting to provide a lunch for the members who arrive before the meeting commences." After some discussion this was agreed to.

At the conclusion of other business the President addressed the meeting in remarks that I fully endorse, and which to my mind apply with equal force at the present time. He emphasised "the great importance of each member attending the meetings as regularly as possible, and taking part in the proceedings, urging that according to the zeal of each individual member would be the success of the Association and the benefit to be derived from it." Mr. Dayus, of Dorrington, Salop, then read a paper on "The Cause of Abortion in Cows and Ewes."

The fourteenth meeting of the Association was held at the Midland Hotel, Derby, on November 16th, 1869, Mr. Markham, one of the Vice-Presidents, in the chair. The members present took lunch together and afterwards proceeded to transact the ordinary business of the Association. Mr. Blakeway, of Stourbridge, then read an essay on "Strangles." There was an animated and profitable discussion.

At the next meeting, held at the Lion Hotel, Nottingham, on Tuesday, March 29th, 1870, Mr. Henry Pyatt, of Nottingham, was elected President; Mr. Carless, Mr. Rossell, and Mr. Garrard Vice-Presidents. Mr. Proctor was elected treasurer, and Mr. Barry re-elected honorary secretary. Mr. King gave notice that at the next meeting he would bring forward a motion to expunge the portion of the rules relating to fines.

A letter was read from the Secretary of the Yorkshire Veterinary Medical Association, containing a resolution passed by that Society as follows:—"That it is the opinion of this Society that the Veterinary Medical Societies in the United Kingdom are of sufficient importance to be represented in Council; and further, this Society is of opinion that if each Society in the United Kingdom would send one of its members to represent its views in Council, the profession would be more thoroughly represented, and thereby the Council so constituted would be better able to bring about the desired changes which are so much needed, and which are so essential before our profession can claim that status in society which as one of the learned professions it has a right to expect."

The meeting approved the spirit of the reaolution, but it was pointed out by Mr. Greaves that no direct representation of the Association could be legally carried out. It was ultimately resolved that the Secretary be directed to request each member of the Association to attend the next annual meeting of the Royal College of Veterinary Surgeons, and to support with his vote such person as may be hereafter agreed upon as a Member of Council.

Mr. Cave proposed, and H. J. Cartwright seconded, that a sum of money be given from the funds of the Association to the Veterinary Benevolent Fund, which resulted in a donation of £30. Mr. Poyser, of Ashbourne, then read an essay on "Pleuro-pneumonia in Cattle."

The fifth annual meeting was held at the Queen's Hotel, Burton-on-Trent, on Tuesday, July 19th, 1870, Mr. Pyatt, the President, in the chair. After the inaugural address by the President, Mr. Poyser concluded his essay on Pleuro-pneumonia, and in the closing sentences strongly condemned the action of the Privy Council in appointing police constables as inspectors, stating that the credit for pointing out the necessity for legislation against the disease was due not to chief constables and policemen, but to the veterinary profession in general, and Professor John Gamgee in particular, neither of whom had received due recognition or acknowledgment. His concluding sentence runs as follows:—"Let the members of the veterinary profession be united; let them throw off this degrading yoke of "Bobbyism," and let Government with its Veterinary Department, and Local Authorities with their chief constables and policemen, catch and 'consign to durance vile' all the diseased animals they can find."

The next meeting was held at the Bell Hotel, Leicester, on Monday, November 28th; the President, Mr. Pyatt, in the chair. A motion to confine the meetings of the Association to one of three centrally situated towns in the Midland Counties, was, owing to the smallness of the meeting and the absence of Mr. King, the proposer, adjourned to the next meeting. Mr. Hill read an essay on "Hæmo-albuminuria in Cattle." Wm. Barry, honorary secretary.

The Swan Hotel, Leicester, was the next meeting-place. Mr. H. Pyatt again occupied the chair. Among the items that may interest you, I find—The Treasurer's accounts not being complete, the consideration of them

was adjourned to the next meeting. A letter was read from the Secretary of the "National Veterinary Benevolent Fund" calling upon this Association to elect one of its members as a Life Governor of that Institution. Mr. Carless was unanimously elected. As a proof of the old saying "History repeats itself," I would in passing point out that our esteemed member, Mr. William Carless, of Stafford, is at the present time Life Governor from this Association on the same Council.

Mr. Blakeway, of Stourbridge, was elected President, Messrs. Pyatt, Stanley, and King, Vice-Presidents. Mr. Proctor was re-elected treasurer, and Mr. Barry, honorary secretary.

After some discussion Mr. King proposed "that the meetings of the Association should be held at Birmingham and Derby alternately during the next year." Mr. Cave seconded the motion, which was carried unanimously. Mr. Cooper, of Lichfield, was elected a member. Mr. Perrins, of Worcester, then read a short paper on the subject of "Acorn Poisoning." An animated discussion ensued, in which all present joined.

The nineteenth meeting of the Association was held at the Hen and Chickens Hotel, Birmingham, on Thursday, 17th August 1871. The President, Mr. Blakeway, of Stourbridge, in the chair. A letter was read from Mr. Barry, honorary secretary, expressing his determination to resign that office. The Treasurer's accounts were passed. Mr. J. Clayworth, of Birmingham, and Mr. Rickaby, of Bewdley, were elected members.

The President delivered the annual address. He reviewed the prospects of the Society, the financial position of which was very satisfactory, and stated that many valuable essays had been read, and much interest manifested at the meetings, which cultivated a good feeling and produced an improvement in the social standing of its members. (Gentlemen, I venture to think these remarks, made just thirty years ago, are equally applicable to this Association to-day.)

Mr. Greaves then read an elaborate and exhaustive essay on "Enzootic and Epizootic Diseases in the Horse," pointing out the leading characteristics of the various forms of influenza, farcy, glanders, &c., at the same time being unable to explain why influenza should at one season attack the head and eyes, and at another the chest. An interesting discussion followed, in which all present joined.

The twentieth meeting was held at the Midland Hotel, Derby, November 28, 1871. The president, Mr. Blakeway, in the chair.

Mr. King spoke in eloquent and feeling terms of the death of the late Professor Spooner, and proposed that a letter of condolence be sent to the widow. Carried unanimously.

Mr. Blakeway proposed that a letter be sent to Mr. Barry, the late honorary secretary, conveying the thanks of the Society for Mr. Barry's valuable services. Seconded by Mr. King, and carried.

Mr. King proposed that a *paid* Secretary to the Association should be employed. Carried unanimously.

Mr. Carless, of Stafford, then delivered an address on the "Castration of Animals," which was a thoroughly practical one, and excited the greatest interest amongst the members present. A. B. Proctor, hon. sec. *pro tem.*

The twenty-first meeting was held at the Hen and Chickens Hotel, Birmingham, on March 26th 1872; the President in the chair. The accounts for the past year were adopted, after having been audited. Several members being in arrear with their subscriptions the treasurer was

requested to intimate to them that unless paid before next meeting Rule IV. would be enforced. Mr. Blakeway was unanimously re-elected President; Messrs. Pyatt, Price, and Hill, Vice-Presidents. Mr. A. B. Proctor was re-elected treasurer, and Mr. M. Palfrey was elected secretary.

Some interesting specimens of navicular disease were laid upon the table by the President, and elicited an animated discussion. M. Palfrey secretary.

The annual meeting was held at the Midland Hotel, Derby, on Tuesday, July 23, 1872. The President, Mr. Blakeway, in the Chair, who delivered the inaugural address. After the address the annual dinner took place, and thus terminated a most pleasant and profitable meeting. M. Palfrey secretary.

The twenty-third meeting was held at the Hen and Chickens Hotel, Birmingham, on Tuesday, November 26th, 1872; the President, Mr. Blakeway, in the chair. Among those present were Messrs. S. Gamgee, Birmingham; G. Fleming, Chatham; R. Pritchard, H. D. Pritchard, and Cartwright, Wolverhampton, &c., &c.. S. Gamgee, Esquire, read an excellent paper on "The Treatment of Wounds."

Mr. Blakeway proposed, and Mr. Litt seconded, that Mr. Gamgee be elected an honorary member of the Association. Carried unanimously. M. Palfrey secretary.

I regret to say that beyond the fact that it was arranged the next meeting should be held at the Midland Hotel, Derby, in March 1873, I have not been able to find any record of the same. Also the twenty-fifth meeting, held in Birmingham in June 1873, does not seem to have been reported. Whether due to laxness on the part of Mr. Palfrey, the secretary, or to suppression from print by the Association itself, I am not in a position to say; however, judging from the proceedings of the twenty-sixth meeting I should not be surprised at the latter.

The twenty-sixth meeting was held at the Midland Hotel, Derby, on Tuesday, November 25th, 1873—the President, Mr. Blakeway, in the chair. Present: Messrs. Greaves, Manchester; Carless, Stafford; Pyatt, Nottingham; Poyser, Ashbourne; Flower, Derby; Price, Birmingham; Markham, Rugeley; Bailey, Leicester; Rossell, Sandiacre; and the Secretary (M. Palfrey).

Mr. Blakeway alluded to the absence of members at the Birmingham meeting in June last and to the circular which he issued thereon. He regretted that the members did not take a more active part in these meetings for mutual advancement, as the papers read on different subjects and the discussions on the best treatment of various diseases were not only beneficial to all, but in the highest degree conducive to the best interests of the profession. He was surprised to find that the meetings were generally best attended by those who lived at the greatest distance, while they were neglected by those who lived near. He knew members could not always attend, but thought they ought to make an effort to do so, and give the Association all the support which it deserves. It was finally decided to hold two meetings in each year, instead of three as at present.

The twenty-seventh meeting was held at the Bell Hotel, Leicester, on Tuesday, May 19th, Mr. H. Pyatt, of Nottingham, Vice-President, in the chair, a severe fall preventing the President attending. Mr. Harry Olver, of Tamworth, was unanimously elected a member of the Association. Mr. J. W. Hill, of Wolverhampton, read a paper on "The Use of the Actual Cautery," which resulted in an interesting discussion.

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The twenty-eighth meeting was held at the Hen and Chickens Hotel, Birmingham, on Tuesday, December 1st, 1874—the President, Mr. F. Blakeway, in the chair. Mr. T. Greaves, of Manchester, was unanimously elected President for the ensuing year. Mr. Ison, Atherstone, Mr. Perrins, Worcester, and Mr. Olver, Tamworth, were chosen Vice-Presidents. Mr. A. B. Proctor was re-elected treasurer. Mr. T. Greaves read a paper on the "Nature and Treatment of Sandcrack." A long discussion ensued. Mr. Ison also read a paper on a case of Embolism of the Iliac Arteries. Discussion postponed till next meeting. Vote of thanks to retiring President brought meeting to a close.

The twenty-ninth meeting was held at the Swan Hotel, Stafford, on Tuesday, June 1st, 1875—the President, Mr. T. Greaves, in the chair. Mr. Alfred Over, Rugby, Mr. Goule, Malvern Link, and Mr. Hodgkinson, Uttoxeter, were unanimously elected members of the Association. The President gave the annual address, which was much appreciated. The members afterwards dined together.

The thirtieth meeting of the Association was held at the Swan Hotel, Wolverhampton, on Tuesday, August 24th, 1875—the President, Mr. T. Greaves, in the chair. The accounts were audited and found correct. Principal Williams delivered an address on the "Rationalé of the Treatment of Disease." A lengthy discussion followed. The following officers were elected for the ensuing year:—Mr. Thomas Greaves, re-elected President; Messrs. Earl, Shifnall, and Olver, Tamworth, Vice-Presidents. Mr. A. B. Proctor was re-elected treasurer, and Mr. Palfrey secretary. Mr. Edward Beddard, Wolverhampton, and Mr. Robert Trigger, of Newcastle, Staff., were unanimously elected members of the Association (an election, gentlemen, that I venture to say this Association has always been able to to congratulate itself upon). Dinner was afterwards partaken of by the members.

The thirty-first meeting was at the Hen and Chickens Hotel, Birmingham, on Tuesday, 11th January 1876—the President, Mr. T. Greaves, of Manchester, in the chair. It was proposed by Mr. Stanley and seconded by Mr. Blakeway, "That the funds of the Society not admitting of a paid secretary, Mr. Palfrey be called upon to resign. Carried.

Mr. Palfrey having resigned, Mr. Stanley proposed and Mr. Proctor seconded, carried unanimously, that Mr. Olver, of Tamworth, be appointed honorary secretary. Mr. Wm. Carless, Jun., of Stafford, Mr. J. H. Pyatt, Jun., of Nottingham; Mr. M. Tailby, and Mr. J. M. Parker, of Birmingham, were unanimously elected members of the Association. A letter announcing the resignation of Mr. W. Carless, Sen., of Stafford, from ill-health, was received with universal regret.

Mr. George Fleming then read his paper on the "Diagnosis of Glanders," which was listened to with marked attention. Mark Palfrey, secretary.

I here propose to close this somewhat rambling and, I fear, uninteresting chronicle of the doings of the Midland Counties Veterinary Medical Association from its formation up to the close of its thirty-first meeting, as from this date an uninterrupted record of the minutes is in the safe keeping of our worthy secretary, Mr. Dawes, and accessible to any of our members who care to peruse it, this, the thirty-first meeting, being in fact the first one the minutes of which are preserved in the records of the Association. I had intended to finish at the conclusion of the thirtieth, but on second con-

sideration, calling to mind the critical state of existence of our Association at that time, when, as we have been frequently informed by our surviving members, it was practically on the balance whether the Association weathered the storm or sank in the abyss of apathy and indifference, and only by a great effort on the part of those esteemed gentlemen (a few of the *then* younger members) and their colleagues, to whom all credit be due, our *alma mater* was safely piloted into smooth waters and more prosperous times. In commemoration of that vital and all important meeting of this Association, and in order that the great efforts of its zealous supporters may be ever remembered, I venture to quote the concluding sentences of that historic gathering as reported in *The Veterinarian* for 1876.

"After a cordial and unanimous vote of thanks was accorded to Mr. Fleming, and with the election of four new members, the meeting terminated. The members then dined together, and altogether it was the most successful, interesting, and enjoyable meeting the Midland Counties Association ever held."

Matters of general interest to our profession I have not enlarged upon; they are ever with us, and my particular views would not assist much towards their settlement. I hope by the information I have placed before you to complete the circle of Association's records and render the work of the future historian agreeable and light.

In conclusion, I have only to once more acknowledge my appreciation of the great honour you have conferred upon me in electing me your president.

REMARKS ON READY-MADE MEDICINES.

BY E. WALLIS HOARE, F.R.C.V.S.

In veterinary practice ready-made medicines occupy an important position in the present day, if we are to judge by the number of firms that advertise them, and the list of testimonials.

In former times all dispensing was carried out by the practitioner and his assistant, and the making-up of physic balls and powders occupied a considerable amount of time. The pharmaceutical chemist has relieved us of a great deal of this laborious work, but there is a danger that the system may be carried too far, and this stage is reached when preparations with formidable names and secret formulæ are prescribed.

In order to carry out rational treatment it is absolutely necessary for us to know the nature of the medicinal agents we prescribe; of course we do not require to be acquainted with the preparation of the drugs, or have a profound knowledge of the most convenient and elegant manner in which to make them up.

For example, chlorodyne, which is now so extensively prescribed instead of Tr. opii, is a very convenient preparation, we know its constituents, although we may not be aware of the best plan of blending them together, nor is it necessary for us to spend time over the procedure.

Again, physic balls are now made up by the wholesale chemist, according to our prescription, in a very neat manner, and much time is saved thereby.

There are other very useful and convenient mixtures of which we know

the constituents, and which we frequently prescribe, such as mist. bismuth cum pepsin.

But preparations are on the market with formidable names and secret formulæ, and it is with surprise that we see testimonials from practitioners as to their efficacy.

Another matter on which comment is justified is the system of advertising patent preparations in professional journals, and when we read in the advertising columns of a scientific periodical advertisements such as "*Every Vet. should prescribe so-and-so*," it is time that the editor put his veto on such conduct.

In a well-known paper devoted to dogs, there is a veterinary column, and the gentleman who answers the queries weekly has a unique method of prescribing for canine patients, as the treatment advised in the majority of cases is, "Use one of the specifics advertised in ————." Truly this is rational therapeutics; and it is very hard on those who endeavour to practise canine medicine in a scientific manner.

With the number of patent veterinary medicines that are advertised, one would imagine that the legitimate work of the practitioner would be seriously interfered with.

Still this is not the case, as in the majority of instances our clients recognise, after a little experience, how exaggerated are the advertised statements concerning these cure-alls, and they learn that the wisest and the cheapest course is to place their cases in qualified hands.

The practitioner should always impress on his clients the folly of using patent preparations, and he has abundant opportunities in doing so in every-day work.

The type No. 2 is apt to run in the opposite direction, and to rush after new remedies and recent methods of treatment, and given them undue credit in therapeutics. He is inclined to overlook the teachings of experience; he does not give Nature credit for her share in cases of recoveries from disease. Imagination plays an important part in the deductions he arrives at as to the value of new remedies. Fortunately this type can be converted by two different means.

In the first place, he finds that as a practitioner his efforts are not appreciated by his clients, and he has to work on more practical lines. In the next place, he learns by his own experience how fallacious deductions frequently are, unless made with great care and deliberation. He loses faith in the magical power supposed to be attached to drugs, and does not conclude that because a few cases recovered under a new line of treatment, that such treatment was superior to all others.

One of the greatest drawbacks to the progress of veterinary science is the egotistical manner which some practitioners assume when describing a case that has recovered under their care. All the credit is given to their method of treatment, and none to Nature, while the idea that their diagnosis may have been incorrect never enters into their minds. Incorrect diagnosis is responsible for the majority of those startling cases of recovery that we so often hear and read about.

Thus when we are told that a large scrotal hernia has been radically cured by injecting a solution of iodine around the inguinal ring; or, when the intestines have protruded after castration, they have been returned, and stayed *in situ* without any further treatment than a plug of tow in the inguinal canal, we are inclined to be sceptical, and inquire whether it was really the intestine that descended in both cases.

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This may appear a rude inquiry, but when we arrive at a mature period of life, we have recollections of how easy mistakes in diagnosis and erroneous deductions may be made.

It is only by a judicious scepticism that we arrive at facts, and avoid errors. And one should be very gullible, indeed, if he swallowed all the wonderful reputed cures and unique stories of diagnosis that he occasionally hears of at veterinary meetings; it seems a pity that many of these are not reported in the professional journals, but they are not for discussion in this manner, they are supposed to be accepted like an orthodox sermon.

The number of new antiseptic agents is assuming enormous proportions. Testimonials as to the efficacy of each new importation are not wanting, and the fact that many are "made in Germany," and have formidable names, induces practitioners to employ them.

As to the superiority of one above the other it is difficult to decide. In a wound, given healthy surroundings, a healthy animal and proper drainage from the wound as well as in the stall, it really matters very little what antiseptic agent we use. Surgical cleanliness is the important matter, and free drainage.

Again, in the department of antipyretics what a number of agents are before us. Still the time-honoured quinine, in spite of new importations, holds its own, and experience teaches us that it is even superior to other drugs for those cases in which it is indicated.

Calomel, an agent whose use was so much abused in former times, is still found a very valuable drug, as a non-irritating purgative and an intestinal antiseptic.

Many other examples might be cited of old and tried remedies, which are apt to be overlooked in the present day, and new agents introduced, which by fancy or imagination are supposed to be far superior to them.

New medicinal agents should be thoroughly tested in a clinical manner on a large number of cases before we venture to laud their value or believe in their superiority.

Therapeutics cannot yet be classed as a science.

There is much to be learned as to the pathology of the different diseases; the art of diagnosis is as yet far from perfect, while the action of drugs on the body, either in health or disease, cannot yet be demonstrated with mathematical accuracy.

If we are to be of any assistance in bringing about this welcome reformation in therapeutics, let us try to eliminate the elements of fancy and imagination from our observations and conclusions; and look steadily for facts rather than for theories. It is not by experiments alone that we can improve our knowledge of therapeutics, but by careful clinical study of disease, and the effects of medicinal agents and methods of treatment thereon; not forgetting to give the *vis medicatrix naturæ* a sufficient share of the κῦδος.

ON IN-BREEDING, INTER-BREEDING, IN-AND-IN-BREEDING.[1]

BY PROFESSOR J. COSSAR EWART.

THERE were, he said, degrees of in-breeding. When distinct varieties, races, or strains were crossed we had cross-breeding (inter-crossing); when,

[1] Read at the weekly meeting of the Edinburgh Royal Society on Monday, June 17.

on the other hand, closely related or consanguineous members of a variety, race, or strain were inter-bred, we had in-breeding. Given the pedigree, it was generally possible to say whether in any given case close in-breeding had been practised, but there was no hard-and-fast line between the less pronounced forms of in-breeding and ordinary or normal breeding.

The closest form of in-breeding resulted from the union of two germ cells derived from the same individual. When, as often happened, the ovules of each flower on a plant were fertilised by pollen of the same flower, the offspring derived from the seed thus produced were closely in-bred. This extreme form of in-breeding, common in plants and not infrequent amongst the lower forms of animals, never occurred in vertebrates. Another form of in-breeding, almost as close as self-fertilisation, occurred when the male and female germ cells were produced by two separate flowers growing on the same plant, or by two members of the same animal colony. In such cases we had cross-fertilisation, but as all the flowers on a plant sprang from a single seed, and all the members of an animal colony were developed from a single ovisperm, the cross-fertilisation was after all a form of self-fertilisation. Amongst the higher animals we had an approach to what happened when the seed was derived from two flowers produced by the same plant, when "identical" twins produced offspring, identical twins like the flowers of the same plant having their origin from a single fertilised germ cell. The most in-bred animals amongst flocks and herds were generally produced by breeding in the direct line between a sire and his daughter or granddaughter, or between a dam and her son or grandson; but close breeding in the collateral line was also practised. All the famous breeds of horses, cattle, sheep, dogs, poultry, &c., had been formed by persistent, and often, at the outset, extremely close in-breeding. In the case of the English racehorse the in-breeding had increased rather than diminished during recent years, with the result that thoroughbred horses, with few exceptions, were very closely related.

Was in-breeding, then, injurious? It was commonly said that healthy parents, no matter how closely related, yielded healthy offspring. This implied that the evils associated by some with in-breeding were not the outcome of consanguinity, but the result of both parents being the victims of similar morbid tendencies, which they were liable to transmit in an exaggerated form to their offspring. Darwin's summing up was: "Cross-fertilisation is generally beneficial, while self-fertilisation is injurious"; and again, "It is a great law of Nature that all organised beings profit from an occasional cross with individuals not closely related to them in blood; and that, on the other hand, long-continued, close in-breeding is injurious." But some biologists refused to admit that in-breeding was injurious. Weismann had said: "In no case does fertilisation correspond to a rejuvenescence or renewal of life, nor is its occurrence necessary in order that life may endure. It is merely an arrangement which renders possible the intermingling of two different hereditary tendencies." On human marriage Heith devoted a large work to attempting to prove that consanguineous marriages were harmless, while Westermark concluded that "consanguineous marriages in some way or other are more or less detrimental to the species." Biologists and breeders who believe in-breeding injurious alleged that it led to loss in size, vigour, and fertility, while certain writers on the domestic animals asserted that in-breeding, if carried far enough, might result in the production of monsters, and the final extinction of the race.

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Professor Cossar Ewart then detailed three experiments he had made with pigeons, which gave evidence of in-breeding leading to loss of constitutional vigour and size, but not to loss of fertility, and that this loss of size and vigour were handed on to the offspring that took after the in-bred parent. The differences in size, constitution, and exclusiveness, &c., were certainly not due to environment, but might be due to the ancestral history. Experiments with rabbits were next narrated. They indicated that for several generations the offspring that took after the in-bred ancestor might be deficient in vigour and hardiness, and supported the view advanced by Sir Arthur Mitchell thirty-five years ago, that the want of vigour in in-bred offspring might not show itself until they were placed in adverse circumstances. Neither the pigeon nor the rabbit experiments lent support to the view that in-breeding induced sterility. From Professor Cossar Ewart's experiments with horses he had failed to find support to the view that in-breeding of necessity diminished either the size or the fertility, but with few exceptions pointed to a loss of hardiness, and especially to in-breeding refining the various tissues, increasing the sensitiveness, leading to irritability and the need for a highly nutritious diet. Experiments with goats indicated normal fertility but feeble constitution as the result of in-breeding, and with cats no loss of fertility in the female.

From these and other experiments Professor Ewart had come to the conclusion that consanguineous breeding was not necessarily accompanied by a diminution in size, or by a loss of fertility; but that unless there was reversion it almost invariably resulted in a loss of constitutional vigour accompanied by a refinement of the tissues, and what was perhaps best known as nervous irritability. If by fertility the rearing of young was meant, then fertility was doubtless often diminished by in-breeding; but if fertility meant the formations of germ cells, in-breeding might be said to increase the fertility. Reference was made to Darwin's note on an in-bred sow being almost barren with a boar of her own strain, but producing three large litters in a single year to a boar of a different strain. Why in-breeding diminished the constitutional vigour it was impossible to say. Mr. Darwin believed that "consanguinity by itself counts for nothing." It had been suggested that the cause was more in the sameness of the environment than in the sameness of the blood; but this explanation was inadequate, for an in-bred animal might produce feeble offspring far from the usual surroundings, even although his or her mate belonged to quite a different variety.

Probably the diversity of opinions as to the effects of in-breeding was largely accounted for by the fact that the effects of in-breeding were not constant. This view evidently occurred to Sir Arthur Mitchell, for he pointed out there may be "full cousinship of blood without much cousinship of quality." Judging from the results of recent experiments, Professor Ewart was inclined even to go the length of saying that the offspring were sometimes less intimately related to each other than are their parents; and also that they pointed to the conclusion that while the offspring of second cousins might be small and deficient in vigour, the offspring of first cousins, or of members of the same litter, might be large, well-formed, and unusually vigorous. It had not been realised by biologists that in-breeding might minister to the production of new varieties. Inter-crossing almost always led to reversion; it also often led to an epidemic of variation, but rarely to an absolutely new variation. When, however, members of a

cross-bred litter were inter-bred, reversion seemed to be arrested, and thus new combinations had a chance of being formed, which eventually resulted in the appearance of, it might be, quite new characters.—(*British Medical Journal.*)

THE VARIOUS METHODS OF CASTRATION IN THE DIFFERENT SPECIES OF ANIMALS.[1]

BY A. MUNRO, M.R.C.V.S.

MR. PRESIDENT AND GENTLEMEN—I ought to apologise to the members of this Association for appearing with another paper so soon, but the fault is hardly mine. Our worthy Secretary was disappointed by a member who should have brought one, and wrote to me asking if I would fill up the vacancy, and as I thought castration was one that would give rise to a good discussion, and one that all veterinary practitioners were interested in, I determined on selecting it as my subject.

The Horse.—Castration is generally done when the horse is young—as a rule as soon as he is one year old, but in some parts of the country they prefer to have them done as soon as they are two or three months old; I have castrated one at three weeks and three days old, and remarkably well it did; but I prefer to operate on them when they are one, or even two years old, for I find the best subjects to operate on are good forward one-year-olds.

The methods are numerous, but I will only quote those generally practised, namely, torsion, caustic clams, actual cautery, ecraseur; the Reliance Castrator, ligature. Each practitioner has his own way, and generally sticks to the one he is successful with throughout the whole of his career.

When I commenced practice the method of castratiing whilst standing was in its infancy, and very rarely practised, and as I had never had the opportunity of seeing the operation performed I continued the one I had always seen used, namely, by torsion when the animal was cast.

Throwing down the Horse.—I have the colt brought into a paddock, place a twitch on nose and have an assistant holding it. Take side lines and place first round the animals neck and tie there like a collar, then put the surcingle close behind fore legs, and put single end through collar formed by side lines and tie fast, to prevent collar from slipping up the neck when the animal is struggling. Then take the long end of side lines and pass between the fore legs and round the hind legs outside, inwards, bringing the ends up through the iron ring at the shoulder, and repeat the same with the other side. Get a man close to each shoulder, and tell them to pull; as they pull the colt goes backwards, and the man holding the twitch steadies him, so that the horse is almost on his haunches before he falls over. Then turn colt on his side, pulling the hind leg close up to his shoulder, and pass the rope twice round the fetlock, then bend back the foreleg beside the hind one, and place the rope two turns round it the opposite way to the one before. When this is done pass rope twice round both legs and one turn round between the fore and hind feet, and carry the end and put it through the collar double, and then take the loose end and throw a hitch on it, so that when you come to undo it you have a

[1] Read at a Meeting of the Lancashire Veterinary Medical Association on June 20th.

continuous unravel, so that any one, although they had not seen it tied, could undo it. The other side is fastened in exactly the same way.

In the castration of old horses I use the hobbles, and throw them on a bed specially prepared for the purpose.

When the animal is down I take the top hind leg out of hobbles, and secure it with a rope round foot, taking the other end up over shonlder through underneath the neck and back to the foot, pulling foot well forward and securing it, thus exposing parts to be operated on.

For this operation I have the horse lying on its near side, so that I can stand close behind and reach over, but when the side lines are used I have the colt right on his back. I then make an incision with the knife and let the testicle out of the scrotum, seize the cord with steel clams, and then with the torsion forceps take hold of the cord as close to the clams as possible, give the clams to an assistant to hold whilst I twist off the testicle with the torsion forceps; then I proceed to take the other one away in the same way. I have always had great faith in torsion, never having had hæmorrhage in a horse after castration when using it.

The Donkey.—In the castration of a donkey the torsion is not successful. The cord of a horse requires a great deal more twisting than the cord of a donkey, which generally breaks off at the second twist, and it is almost sure to be followed by fatal hæmorrhage. I would strongly advise young practitioners to note this, and use caustic clams or actual cautery.

The Bull.—Bulls from three to four months old to as many years I have always operated on standing tied to a stake. I place a pair of bull-dogs in the nose, which an assistant holds whilst I stand behind; but with calves from a fortnight to six weeks old I have them lifted up by an assistant standing against the wall so that they sit on their haunches, then I secure their hind legs with a small double rope, and place my knee upon this to keep them from struggling. Then make an incision in the scrotum with the knife, and when the testicle comes out I cut through the non-vascular tissue of cord, fix on the clams, and twist off with the torsion forceps.

The Standing Operation.—Nearly at the end of last summer I began to castrate horses standing, and have continued it the whole of this year with very great success. Throughout the whole time my instrument has been the ecraseur made by Arnold and Sons with Dewar's patent catch, and I must say it has given very great satisfaction.

My mode of procedure is to have the colt in an open space or field, and allow only one man to hold the twitch and halter, and stand on the same side as I do whilst I operate, as this allows the colt to walk round whilst I am at work, because I find that if the colt is held too tight he has a tendency to lie down. I generally stand on the near side, but in cases where there is one testicle smaller than the other, and which I find is often on the off side, I go to that side, remove the small one first, and then come over to the near side to remove the other. Castration standing considerably reduces the amount of labour, and it is surprising to me how quietly they stand. Many practitioners use the wooden clams, but these necessitate a second visit of the veterinary surgeon on the following day, and as there is only one fee for the operation the ecraseur is a great consideration.

Lambs.—It is not often that veterinary surgeons are called to perform castration on lambs, but I generally have some every year. I have the animal held up by an assistant, take hold of the scrotum at the point, and

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cut it off, thus exposing both testicles at once, and with a pair of forceps pull them out one at a time and cut them straight off with a knife.

Old Boars.—I think old boars are the most troublesome of all the animals we are called to operate on. My plan is to take a strong rope, an inch thick, with a noose on end, and pnt it into the subject's mouth over the tusks on upper jaw. Pull rope tight and draw head to a post or stake of some strength, and when the head rests on same fasten. All this time Mr. Pig will be yelling and jumping about, finally sitting down on his haunches when I want to operate. To get him into position for the operation I pass a bar of wood about six feet long under his belly in front of the hind legs, and get a man at each side to lift him up, so that his hind feet are off the ground. Then make an incision in the scrotum and remove testicles with torsion as before.

Dogs.—I generally chloroform and remove the testicles by ligature.

The greatest means to make castration a success is cleanliness in instruments and everything connected with it. After an operation I have my instruments always boiled, and during the proceedings of operation have a bucket of warm water with carbolic acid added, and before I begin I place all my instruments in it, and as I finish using them place them back in bucket before using them again, and to this I attribute my success.

I have to thank you, gentlemen, for your kind attention to my little epistle.

VETERINARY POLITICS.[1]

BY C. F. HULFORD, M.R.C.V.S.

GENTLEMEN,—My first pleasant duty is to sincerely thank you for the honour you have done me in electing me to the Presidential Chair. I am conscious—very conscious—of many shortcomings which the generous nature of my friend Mr. Simpson so magnanimously overlooked when he proposed me as your President, and which you, with equal magnanimity, confirmed. I trust, however, when the time has arrived for you to divorce me from this chair, that I may be enabled to hand down to my successor the trust which you have reposed in me unsullied.

I have been greatly perplexed to know what form a Presidential Address should take, and so to help me out of this dilemma I made bold to write to our indefatigable Secretary to see if I could persuade him to lend me that precious symbol of his office the minute-book. True to his good nature, he sent it. A perusal of our past meetings and of our earlier records led me to notice that although our Association is not an old one, we have in the past numbered among our members many distinguished ornaments of the profession. I also notice that apparently in the past our attendances were excellent and bear no comparison with what we see at our ordinary meetings at the present time. Again, I notice that there appeared no dearth of papers—many of a high order. Why this apathy now? Are we indifferent and unmindful of the great good such associations as these lead to, where the meeting together of professional men, each and all having the same mission in life, take place, where the interchange of idea and experiences react to the benefit not only of ourselves but our profession and of our

[1] Presidential Address read at a Meeting of Southern Counties Veterinary Medical Association on June 27th.

clients, irrespective of the sociability of such gatherings? I say are we unmindful of such things, or must we ascribe it to the pressing emergencies of the surgeon of to-day, the inability, owing to the struggle for existence which one finds ever increasing, to seek relaxation even for so short a time? Possibly there is truth in both deterrents. But with regard to the first—let us away with that apathy, and think of Lord Bacon's axiom, "Every man is a debtor to his profession." Let us consider that the one great means of discharging that debt is to do something towards arousing the profession from the indifference to its corporate interests by which it is generally characterised. What are the means to this end? I take it, associations such as these, where the interchange of ideas and experiences upon subjects social as well as medical are of the utmost benefit to its members, and indirectly to the profession as a whole.

No member of the profession has a right to say that he takes no interest in what we may call veterinary politics; by which we understand the maintenance of the honour and the interests of the profession, the consolidation and extension of its influence on public opinion and on the course of legislation in matters touching public health, and the scientific and social interests of the profession itself. The real source of many of the disadvantages under which the profession still labours is traceable to the apathy of many of its members who cannot be roused to take a share in the determination of matters which lie a little outside the absorbing calls of actual practice or of clinical work. Considering the youth of our profession, I submit that we have a very fine record of work done. Our strides have been rapid and well sustained. Let there be no turning back. To-day is a great epoch in our history. The country is on the brink of great sanitary reforms in which the veterinary and human surgeon must play their respective parts, and play those parts hand-in-hand for the common good of their fellow-beings. Let us demonstrate to the world our fitness for the repose in us of those privileges we seek, and which by professional inheritance are ours. Our calling ranks with the most exalted and sacred of man's appointments, and needs for its successful pursuit the highest powers of the mind. Let us advance ourselves with the rapid march of time, remembering that medicine is a progressive science, and must ever continue so until nature has yielded up to the biologist and physicist her last secret in all that concerns life. The scientific pathology of to-day owes its brightest chapters, its greatest truths, and its most beneficent teaching to the study of morbid processes in lower animals. Human and veterinary medicine are bound together by the strongest natural affinities, and their intimate science relations demand that those who seek to comprehend the one must have regard to the teachings of the other. In such mutual co-operation and support as will enlarge the foundation on which medical knowledge rests appears to me to reside the future hope of medicine, both human and comparative. A share in the guardianship of the health of man against the attacks of disease falls fairly within our province, and for this reason let us put forth our best energies, and having set our hands to the plough, let us not rest contented until we receive that share of public recognition, which, as co-guardians with the medical profession of the public health, our training and special aptitude so pre-eminently fit us. With such insidious diseases as tuberculosis, anthrax, and glanders constantly in our midst, one and all transmissible to man by the most simple as well as by the most subtle means, each contesting and defeating the resources

of therapeutics and hygiene—in the face of these things I say there is surely reason in suggesting that those whose special training has fitted them to detect these virulent diseases, to devise means for their extinction in the lower animals, represents a power and an indispensable element in the sanitary science of this country.

The time has arrived when some restraint should be put upon the unbridled use of tuberculous oxen for breeding purposes, and on the disposal of tuberculous flesh. Both observation and experiment clearly point to our present reckless system of cattle-breeding as a menace to public health, and call for legislative interference and measures of control. And to this end I personally and confidently look forward to the appointment of a veterinary medical officer of health as a thing of course, not of occasional rarity, amongst whose duties would be the inspection, in conjunction with the medical officer of health, of meat intended for human consumption. Abroad the control of meat inspection is almost entirely in the hands of veterinary surgeons. A class of very highly trained scientific experts they are, and why? Simply because more freedom is allowed, and more opportunity given for scientific research abroad than here, and because public abbatoirs have existed for a considerable time, the need for a scientific control of the animals slaughtered in them became more felt. I also look forward with great expectancy and hope to the outcome of the work of the British Congress on Tuberculosis. Than tuberculosis there is no disease affecting man or animals on which more scientific light has been thrown by veterinary research. The purely contagious nature of the disease has been established by veterinarians, and the value of tuberculin as an aid to diagnosis is still recognised almost alone in veterinary practice. I trust that the outcome of this great conference will be the scheduling of tuberculosis under the Contagious Diseases Animals Act; the determination of compensation for slaughtered animals, the reliability or otherwise of tuberculin as a diagnostic agent, and the establishment of public abbatoirs. There is not the slightest doubt that not the least of the services rendered by public abbatoirs has been the very valuable knowledge that has been gained as to the extent of diseases, especially tuberculosis, among domestic animals.

Turning briefly to other matters of interest, a question which is agitating the professional mind is the administration of the Army Veterinary Department, a department which is systematically undermanned and systematically snubbed. As *The Record* has it, it is impossible to say what a properly manned and efficient veterinary department might not have done for us during this terrible strife in South Africa. But the War Department does not aim at efficiency. The lamentable loss of horses in South Africa, and the frightful train of misfortunes directly traceable to it, are well known to us all, unfortunately. Indirectly, what is this attributable to? The whole thing turns upon the word authority, the refusal to grant army rank to officers of the Army Veterinary Department,—in other words, refusal to put them upon the same footing as officers of other departments. The position taken up by the War Office is childish in the extreme. Of all departmental officers, who are more competent than the veterinarians? Let us trust, through the good offices and dogged determination of our friend Mr. Simpson and those who think with him, this scandal may be effaced from our list of grievances, and with it that other bugbear, the employment of laymen in the discharge of those highly professional duties

connected with the administration of the Board of Agriculture. As it was very tersely put the other day, the Minister of Agriculture has a splendid chance of distinguishing himself as an administrator, if he would pension off all the ex-army and ex-navy men who at present draw salaries as officials of the Board of Agriculture, and would substitute for them qualified veterinary surgeons, he would take a long step towards the improvement in the issue of the war between the authorities and contagious diseases in farm live stock.

Since we last met the hand of death has been busy, and has removed from us our well-beloved Queen, a loss which we, as individuals and as a nation feel to be irreparable, but, although dead, her good works will live after her, and we shall reap the benefit of that good and noble life spent in the service of the country she loved so well, and her people.

Coming nearer home, in a professional sense we have to mourn the loss of three of the giants of our profession. I refer to Professor Williams, Dr. Fleming, and Sir Henry Simpson. This is a record loss in one year. No distinction can be drawn between these men of sterling worth. They have left their mark upon the veterinary history of their time, and they will be affectionately remembered for their kindliness of heart and generosity and professional greatness by a grateful profession. In conclusion, I must thank you for the courtesy with which you have listened to my disjointed remarks.

CATTLE DEALING DISPUTE.

How long does a Quey carry her Calf?

GRAHAM *v.* CRAWFORD.

At Dumfries the above case was heard before Sheriff Campion on 6th and 13th June.

Mr. Crawford, being examined by Mr. Thomson, stated that he sent 46 bulling queys to the mart for sale on the 20th August. He had bought them in one lot from Hugh Caldwell, cattle dealer, and they were taken direct to the station at Stranraer from a park just outside the town. He put two lots of eleven through the ring, but they were not sold, and Mr. M'Kean put in his twenty-four, being the queys here in question. Witness said the two lots of eleven were clear of the bull so far as he knew. When the twenty-four came in the auctioneer's clerk—he thought his name was Campbell—asked if he would engage these, meaning to warrant them in the same way. He replied that they were not his to engage; he had them sold already. Mr. Wallet afterwards paid the price of these twenty-four into the bank to witness's account. Witness bought six or seven Ayrshire queys the same day at a smaller price and mixed them with the twenty-one that had not been sold, and sold some of them at Castle-Douglas and some at Dumfries. He sold some of them privately at Dumfries to Mr. Steel of Auchenfranco. On 26th August he received a letter from Mr. Wallet, enclosing one from Mr. Graham, stating that the queys were in calf and he would not pay for them. (Q.) Did you say to Mr. Wallet on Monday that the queys were not in calf, and that if they were you would allow Mr. Graham compensation? (A.) I never said such

a word. I said the queys were not mine when Mr. Graham bought them, and that Mr. Graham seemed in a hurry about the calving. Mr. Wallet asked who they belonged to, and I would not tell him. Witness denied having said to Mr. Graham that he would bet ten to one that the queys were not in calf. About two months after the sale, in a railway carriage on the way to Annan, Mr. Graham said he had the queys tied up to fatten, but he thought one or two of them were in calf, and witness said it was likely the calves would be the best payers.

Mr. GRAHAM, the pursuer, said he bought the queys at £8 a-piece, or £192 in all, on 20th August 1900. Defender was in the ring with the queys, and he heard him say that he would guarantee them clear of the bull. The auctioneer also gave the guarantee. A drover named Slimmon drove the queys to Redwell, where they rested for the night, and then on to Airdrie next day. It was not possible that a bull could have got among the queys on the night of their arrival. The only bull on the farm was a young pure shorthorn, white in colour. There had been no Ayrshire bull on the farm for fourteen years. A day or two afterwards he asked Slimmon (who remained to work at harvest) if he did not think some of the queys were in calf, and Slimmon replied, "Certainly; any man could see that." He received a letter from Mr. Wallet, dated 29th August, stating that if the queys proved to be in calf Mr. Crawford would allow him compensation. One of the queys picked calf on 6th January. Another calved on 7th May. The calf only lived for four or five hours. Others calved on 8th, 13th, 14th, 15th, 18th, and 22nd May, and on 1st and 3rd June. There were nine living calves (two having been born on 13th May), and there were three more queys apparently due to calve. Airdrie was not a dairy farm. He bought these queys with the purpose of putting the bull to them in the end of December or beginning of January, so that he could sell them as back-end calvers off that grass without any trouble. He was prevented from doing so, and estimated his loss at £3 : 10s. per head. They had just to let the calves suck the queys, as they had nobody to milk them. When the queys came to the full flow of milk, the calves being small, they were not able to take all the milk. They might in this way loose some of the quarters of the queys, which would depreciate their value other £2 or £3.

W. OWEN WILLIAMS, Principal of the New Veterinary College, Edinburgh, stated that he visited Airdrie on Wednesday and made a careful inspection of twelve queys, a bull, and nine calves. The calves appeared to him to be pure Ayrshire. The eight incisor teeth were well through the gums; and from that and the general appearance of the calves he concluded that they were all born at their proper period. In his experience cows and queys carried their calves from 39 to 41 weeks, and 40 weeks was taken as the mean. In the case of seven of the calves, and allowing a period of 280 days, it was certain that the queys must have been bulled at least a week before 20th August, and some a fortnight prior to that date. In the case of the two last calved the probable dates were 27th and 25th August; but they might have been bulled before 20th August. That would give 285 and 287 days, periods well within the limits of gestation. Only 20 per cent. of calves born under 270 days lived. In cross-examination Principal Williams said if a quey aborted on 6th January it would not be possible to detect a living calf in the same quey at the 11th of February. A quey might drop a mature calf at 37½ weeks, but it would

be a great exception. Queys had no tendency to drop their calves before the forty weeks. It was not possible that these queys could have been detected to be in calf on 25th August. He would not like to give a positive opinion as to whether a cow was in calf or not until several months had elapsed. In re-examination by Mr. Thomson Principal Williams said if the queys had not been bulled before 20th August the calves would have shown clear evidence of prematurity. He took photographs and produced them to show that they were all healthy calves. A calf born on the 267th day would in all probability not be alive; and if it were alive, it would be a very weakly, immature calf. There was no calf at Airdrie which he would characterise in that way. There were no signs of immaturity in any of them.

James Lindsay, V.S., Dumfries, was called to inspect the queys at Airdrie on 26th January. He found twelve of them to be certainly in calf. Other four or five appeared to be in calf; one had cast a calf; and the remaining seven were, in his opinion, barren. The queys were in fairly good condition—such condition as queys should be in if they were not to be sold as due to calve. He spoke to subsequent visits to the farm. The earliest period at which he could tell by feeling that a cow was in calf was four months and a half. He could not tell within a fortnight or three weeks either by sight or feeling.

Robert M'Nae, V.S., Maxwelltown, visited Airdrie on 7th May and 4th June. All the calves appeared to be quite matured.

William Wright, V.S., Thornhill, gave similar evidence.

David Steel stated he would have on an average sixty to seventy calving heifers in a year. On 22nd August last he bought eighteen Ayrshire queys from Mr. Crawford privately in Messrs. Thomson & Lawrie's mart at Dumfries, paying £7 each for ten and £6 each for eight. Mr. Crawford told him that he had sold twenty-four of the same lot at £8 each. The queys were taken to Auchenfranco the same night. Two of them proved to be in calf, and dropped Ayrshire calves on the 4th and 14th of May. He would say that they were by the same sire as the nine calves which he had seen at Airdrie.

William Graham, proprietor of Slodahill, Lockerbie, stated that he kept a herd of Ayrshire cows, which generally numbered about eighty. His old-fashioned way of counting the period of gestation was nine months and a fortnight past. When a cow calved at the nine months they said she had calved sharp. He had seen them go three weeks past the nine months; the longest he ever saw them go was three weeks and three days, and the cow calved all right—a strong, good calf. The longer a calf was carried it was the stronger, and the cow came better to her milk. If a cow calved before the nine months he considered that she calved prematurely, and the calf was always smaller. If it was in the seventh month, the calf was a perfect object, but sometimes lived. Neither the calves nor queys at Airdrie showed any appearance, according to his judgment, of the calvings having been premature. There were only two extra small calves, and the reason, he thought, was that they were both suckled on one quey. He would call them all Ayrshire calves.

Hugh Caldwell considered that a quey would calve anywhere from thirty-six to forty-two weeks. A quey might throw a matured calf in thirty-six weeks.

William Miller, farmer, Powillimont, corroborated. He described the

queys at the first visit as rather thin and having been "middlingly wintered." It was quite possible that a quey might give birth at thirty-seven and a half weeks to a calf which would live and be brought up. If Mr. Graham had wintered these queys well and sold them in the spring as calving queys, he did not think he would have incurred any loss at all.

THOMAS SMELLIE, farmer, Longbridgemuir, was called to say that a quey in his experience had calved at 257 days; but as it transpired that he bought the quey and could not speak with personal knowledge to the date, which he got from the seller, the evidence was disallowed. He stated that he had had healthy calves born between thirty-seven and thirty-eight weeks. They generally sent queys to the market in the thirty-eighth week to calve in the thirty-ninth.

THOMAS JAMES CAMPBELL, V.S., Castle-Douglas, stated that he visited Airdrie on 20th February with Mr. Crawford, Mr. Caldwell, and others. He found several of the queys in calf. He could not feel the calf in others. When a cow had been in calf from five to six months you could tell quite easily. He also examined a quey that was said to have picked calf, but he found that she was carrying a calf. It was therefore not true that she had picked. He also visited Airdrie in May along with Mr. Macintosh, V.S., and some others. The usual period of gestation he put at forty weeks, and the minimum at thirty-six. The average would be 280 days, ten days off or on was quite common. In cross-examination witness stated the period for queys at thirty-six to forty-two weeks. This opinion was founded on his professional training and what he had learned by going about dairy farms. He had no experience himself of keeping cows.

ANDREW JOHNSTONE M'INTOSH, V.S., Boreland, Dumfries, stated that he went to Airdrie on 1st April. He thought six of the twenty-four queys were in calf, although there were two he had a little doubt about. Four were nearer calving than the others, but even these were not near it. It was quite possible that a calf could be born in 262 days. He came to the conclusion that two at least of the calves which he saw on the 16th May were premature. It was quite possible that the queys could have been bulled immediately after 20th August and calved on the dates given. He had read that bull calves were sometimes carried longer than queys, but he had no experience that that was the case. The fixed time for cows carrying their calves was nine months. His experience was that they went ten to fourteen days over the nine months, and sometimes ten to fourteen days below it, with several days above or below. (Q.) You would not regard it as anything exceptional for a quey to calve any time from thirty-six to forty weeks? (A.) No; if there was an exciting cause to bring it about. Thirty-six weeks and a half would not have been an exceptional date. In my experience queys calve earlier than cows. (Q.) You would put the minimum at 259 days and the maximum at 287 days? (A.) That would be a fair average way of putting it, but there are extremes above and below. A good deal depends on the season of the year. In the spring they go a few days longer. Going out to the grass they would relax and come quicker, or excitable animals bustling about would come quicker. In cross-examination witness said the limits of calving might be put from 260 to 290 days, or perhaps 287, but extremes went even beyond these periods. He would expect a weaker calf at 270 days than in 290, and the shorter the period the weaker they would be until you reached the period at which they would not live. He did not examine the teeth of the calf born on the

13th. These were not the usual things examined in judging of prematurity, and he did not examine the mother. She had calved two or three days and she was in the field. In answer to Mr. Nicholson, witness stated that the two queys which calved on 1st June and 3rd June had gone beyond the average time—the time would be extreme for heifers, not cows. In his opinion they would not be bulled before the 20th August.

THE CANADIAN CATTLE TRADE.

The Restrictions on Importation—Conference in Glasgow.

A conference of representatives of parties interested in the removal of the restrictions on the importation of Canadian cattle was held in the City Chambers on the 13th August 1901. In addition to a considerable number of local gentlemen there were present representatives from nearly every part of Scotland. The Lord Provost presided.

The Chairman, in opening the proceedings, expressed his satisfaction that so many gentlemen from so many parts of Scotland had gathered together in Glasgow to discuss so important a question as the removal of the restrictions placed on Canadian cattle. The facts of the case were such as to call not only for immediate, but for strenuous action. When the restrictions were imposed some nine years ago there was every reason to believe that they were only temporary, and that as soon as the fear of contagion was removed the restrictions would disappear. Instead of such a step being taken, an Act of Parliament was passed making the restrictions permanent, and there was now no possibility of their being removed unless by Act of Parliament. The benefits that would accrue from the removal of the restrictions both to Canada and to this country were obvious, and the question which suggested itself was—Was there any evidence to warrant the maintenance of those offensive restrictions? Was there any evidence that there was contagious pleuro in Canada, and if so, was it of such an extent as to justify a continuance of these restrictions? They were all aware such was not the case. He hoped the result of their conference would be to secure the object they had in view.

Ex-Bailie Brechin then took the chair, and invited a free expression of opinion on the two resolutions which would be submitted to the meeting.

Messrs. M'Combie, Aberdeenshire, Cook, Fife, and Gemmel, East Lothian, having reported that the farmers in those districts were unanimously in favour of the removal of the restrictions—

Mr. William Smith, Brechin, moved a resolution to the effect that the meeting was unanimously of opinion that the restrictions imposed on the importation of Canadian cattle into the United Kingdom were no longer necessary for the safety and well-being of the country, and ought to be removed. He repudiated the suggestion that it was a question as between the feeder and the breeder, and maintained that in closing the Canadian cattle trade they were doing their best to drive free trade from Great Britain. The Canadian cattle were the healthiest they had ever passed through their hands, and the sooner they were allowed to take them in again the better it would be for the farmers, the commercial interests of the country, and more particularly for the landlords of Scotland.

Bailie Lyon, Aberdeen, seconded.

Bailie FERGUSON, Glasgow, in supporting the motion, advocated a vigorous prosecution of their claim to better treatment at the hands of the Government.

Mr. M'COMBIE, Aberdeen, answering the question why it was that the rural population went down and that of the cities up, maintained, without fear of contradiction, that if they had but a small portion of the free trade they were asking to-day, the counties would grow just as the cities grew.

The resolution was unanimously carried.

Mr. SHIELDS, Haddingtonshire, then moved that they appoint a representative executive committee to take steps to place the foregoing resolution before the President of the Board of Agriculture, and to urge upon him to introduce a Bill in Parliament.

Mr. SPEED, Dundee, seconded.

Ex-Bailie ROBERT ANDERSON, Glasgow, supported the resolution, and on his suggestion it was agreed to add to it the words—"And further, to take all the necessary action to attain the object desired."

Mr. NATHANIEL DUNLOP, speaking as a member of the Clyde Trust, expressed his cordial sympathy with the object of the meeting.

This resolution was also unanimously carried, and the executive committee of the Glasgow Local Authority was appointed to act until other arrangements were made.

The company afterwards had lunch within the buildings.

TUBERCULOSIS IN THE STATE OF VICTORIA.[1]

BY G. PENTLAND, CHIEF INSPECTOR OF STOCK FOR THE STATE OF VICTORIA.

EARLY in the year 1883 the attention of the District and Border Staff was called by the late Chief Inspector of Stock, Mr. Curr, to the fact that diseases of cattle known as tuberculosis (consumption) and "*cancer*" (lumpy jaw), now known as actinomycosis, were bscoming more common, and appeared to be gaining ground.

At that time little was known of the nature of these diseases, but the brilliant discovery by Dr. Koch, in 1882, of tuberculosis being due to a minute rod-like organism, the *Bacillus tuberculosis*, awoke the scientists of the world to inquire into the value of this great discovery. In 1883 the Hon. James Buchanan, M.L.C., an experienced stock-owner, called the attention of the Victorian Government to the fact that it was necessary that a Board of Experts should be appointed "to inquire into the existence and extent in this Colony of the disease in cattle known as tuberculosis; whether its existence is likely to be detrimental to the public health, and what preventive measures should be adopted," and in 1885 the Board recommended, after very exhaustive inquiries, that tuberculosis be placed on the schedule of contagious diseases under the Stock Act, 1870, which was done in the year 1887, and since then this department has been able to deal with visibly affected animals in the same way as with pleuro-pneumonia and other infectious diseases. Previous to this power being given by law, there was no power to cause tuberculous animals to be destroyed, although a large number were willingly destroyed by owners at the instance of inspectors, who generally used to a large extent moral suasion in these matters. We are now constantly destroying affected animals in the course of our inspec-

[1] Read at the British Congress on Tuberculosis, held at London from 22nd to 26th July inclusive.

tions, both in the districts and on the borders, as the annual returns hereunder show.

In the year 1893 special instructions were given by the Secretary for Agriculture to have all dairy cattle inspected as closely as possible by the District Staff, and I think I am safe in saying that this instruction has been faithfully carried out. The District Staff is composed of practical men experienced amongst stock and accustomed to country life and the ways of the bush. They have in the past been successful in stamping out scab, and also have met with great success in coping with and keeping down pleuro-pneumonia by the measures of slaughter, quarantine, and inoculation. The duty, then, of combating tuberculosis has fallen to the stock branch, whose primary business is to see that infectious and contagious diseases are kept out by land and sea and to prevent the spread of any infectious or contagious disease within the State. Tuberculosis, pleuro-pneumonia, actinomycosis are all imported diseases; were introduced at a time when there was no department for their prevention or control, hence they gained great headway, and would do so again if there were no stock departments throughout Australasia to keep them in check. Besides having practical and experienced men to travel the districts, there are attached to the department six veterinary surgeons in private practice, whose services are sought in special cases where special inquiry or demonstration is necessary. They are called upon, in conjunction with inspectors of stock, to inspect all foreign stock arriving at this port, both before landing and again before its release from quarantine. We thus have a staff equal to any emergency, and in the regulations we have hard and fast rules for the guidance of owners of stock and the general staff. As regards the general condition of dairy stock, I reported in June 1893 that dairymen, as a rule, vie with each other in keeping the best class of stock, it being the best cows that yield a profit, and that odd cases of tuberculosis crop up once in a way, which they readily get rid of; but that, on the whole, the health of our dairy stock was excellent, and would compare favourably with the same class in any part of the world, owners being only too anxious to maintain the excellence that had been obtained. In a report, dated 2nd November 1896, I stated that it was upon the principle of stock-owners destroying diseased animals themselves, aided by the inspectorial staff, that pleuro-pneumonia was kept in check, and it has been upon the same principle and with the same aid that tuberculosis has been got under. But the greatest factor we have in preventing the spread of tuberculosis is the open-air life which our cattle live, and this fact accounts for the greater freedom from tubercular disease than the cattle of Great Britain, Denmark, and other European countries, in which they are housed and hand-fed for the best part of the year. On disease breaking out in the confined atmospheres of byres, the infection spreads rapidly throughout, and there is a larger percentage of animals affected than there would be if they were living under more favourable conditions of hygiene. We, therefore, have an advantage over countries whose climatic conditions are not so favourable as ours. The sun's rays, too, are all-powerful in destroying the bacillus of tuberculosis, and the success of any scheme for getting rid of, and keeping rid of, tuberculosis will depend on cleanliness, and having cow-sheds and yards built so as to get as much sunlight as possible. It is to be remembered that darkness and dirt, overcrowding, and imperfect ventilation, favour the spread of tuberculosis. No infected or suspected animals should be allowed to mix with the healthy, and among the many ways of infection being spread is

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that of healthy animals licking affected ones; and in small dusty areas or yards, where diseased animals have been, the dry particles containing the germs of disease are floating about, and are therefore a menace to man and beast.

STATISTICS.

Since 1885, the year of the Board's report, which showed that 7 per cent. of all cattle were affected in various degrees, the percentage has been decreasing at a satisfactory rate according to the statistics obtained at the city abattoirs. In 1896 the return showed that all cattle were affected to the extent of 4 per cent., and a later return for twelve months ending 30th June 1899 showed that bullocks were affected to the extent of 3 per cent.; cows, 5 per cent.; and calves, one only out of 3935 was found to be affected. For the year ending 31st December last the return furnished by the superintendent of city abattoirs is as follows:—

Cattle.	Tuberculosis.		
	Number slaughtered and inspected.	Number affected in various degrees.	Number condemned and destroyed.
Bullocks, . .	36,125	No record kept.	66
Cows, . . .	8,517		64
Calves, . . .	3,532		*Nil.*
Totals, . .	48,174	—	130

The percentage of disease found at the city abattoirs is necessarily much greater than that found by inspectors in live stock, and therefore it is only the rough of the herds that are culled, so that affected animals showing no external signs escape; but, nevertheless, the general condition of our dairy and other classes of cattle is improved, whilst in every animal that is destroyed and the carcase burnt the centres of contagion are thereby lessened and kept in check, and suspicious cases are dealt with under the tuberculin test or by isolation. The following statement shows the number of dairy and other cattle inspected and killed in the districts on account of tuberculosis for the year 1894-1900:—

Year.	Cattle.	Number inspected.	Killed for Tuberculosis.
1894	Dairy	119,450	315
	Other	194,373	276
1895	Dairy	108,169	325
	Other	236,651	269
1896	Dairy	120,709	320
	Other	245,448	229
1897	Dairy	102,972	270
	Other	227,167	182
1898	Dairy	91,397	220
	Other	257,387	237
1899	Dairy	87,360	151
	Other	227,008	141
1900	Dairy	85,413	115
	Other	202,044	114
		Total killed, .	3165

Besides the above numbers of cattle killed for tuberculosis there are always considerable numbers isolated to prove the existence of disease; and the numbers killed on further inspection appear in returns later on.

To the above is to be added the number of tuberculous cattle inspected on the borders for the period 1891-1900:—

TUBERCULOSIS.

Year.	Number inspected.	Number refused admission.
1891	128,957	619
1892	69,491	182
1893	43,371	60
1894	39,182	69
1895	35,208	116
1896	35,212	75
1897	46,343	133
1898	30,317	1
1899	42,398	33
1900	32,969	10
Total, .	503,448	1298

When the tuberculin test has been applied to dairy cattle not more than 9 per cent of reactions have been obtained, and it is to be borne in mind that the bulk of these cattle were living largely under artificial conditions; and, as a sequence, a large percentage was obtained, whilst in another part of the State, where cattle were living under more natural conditions, no tuberculosis was found. On this point it is found that tuberculosis is much less common in the general bovine population than in dairy cattle and cattle slaughtered at the abattoirs. Taking the statistics of our city abattoirs at, say, 3 per cent. of all cattle slaughtered in various degrees of tuberculosis—and, according to the latest returns, as above given, this certainly is an outside estimate, but may be taken as a basis—we find that there is no comparison between the cattle of this State and those of the older countries, which show unmistakeably that they have five times more tuberculosis than we have, or that their average may be set down at from 15 to 20 per cent. Our comparative freedom from this and other infectious and contagious diseases is mainly due to the favourable conditions of our climate and outdoor life.

NO COMPENSATION.

Owners of tuberculous stock are generally only too pleased to get rid of diseased stock without compensation and without delays, their motto being, "The first loss is always the best loss." No compensation was given in the case of scab, nor in the case of pleuro-pneumonia. It was only given when an outbreak of a new disease—foot-and-mouth disease—occurred in this Colony about thirty years ago, and in the case of some scabby sheep being illegally destroyed. Compensation for valueless beasts has not been asked by owners of cattle or sheep, as they do not place any value on stock suffering from disease, and they readily consent to destruction without raising the question of compensation when inspectors make their condem-

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nations. Clause 10 of the Act clenches this matter, as it provides that under an Order in Council owners of diseased stock shall have no claim for compensation when destroyed at the instance of inspectors. Diseased animals are usually destroyed and opened on the nearest available spot, and the diseased parts shown to the owner, who profits by the object-lesson. This course is highly educational to them in getting affected beasts destroyed at once, without waiting for the action of this Department.

In the case of the tuberculin test, I may here state that owners of apparently healthy animals reacting and slaughtered, and showing but slight lesions, complain of the losses they sustain, and would claim compensation in such cases if the tuberculin test were compulsory. Some owners argue that their cattle might live for years where the lesions are slight, and might heal up, or make no further progress; but, on the other hand, if the test disclosed generalised tuberculosis, or one or more organs badly affected, then they would not apply to be compensated.

POWERS OF INSPECTORS.

The Diseases in Stock Act, 1890, consolidating the laws relating to diseases in stock, provides by section 6 that Inspectors of Stock shall have power to enter at any time any ship, or any land, or any building, not being a dwelling-house, for the purpose of inspecting any stock.

This is a power which enables an inspector to find out for himself the state of his district as regards disease, and has a certain amount of influence among stock-owners in reporting disease. I understand that in England inspectors can have no such power, and if this be the case, owners of affected stock can do just as they like, either report disease or give notice of such for compensation, or send stock that has been in contact with affected stock to the market yards for sale, since they have nothing to fear whilst an inspector has no power of entering.

Regulations for placing diseased stock in quarantine are in force in this State, and this power judiciously exercised enables an inspector to have affected stock destroyed instanter, with the consent of the owner. The owner readily consents to destroy affected stock, knowing the power the inspector has in seizing and quarantining diseased stock and placing all other stock in quarantine. The owner, however, can refuse to destroy his affected stock until an Order in Council is obtained, and in this he has the right to appear.

As regards foreign and inter-State stock we have sufficient power to fix any condition that may be justifiable for introducing certain kinds of stock, and this enables us to prevent stock by sea or land being introduced if they are affected with tuberculosis or any other disease, and the "Health Act" gives power to prohibit any kind of stock, whether diseased or not.

MEMBERS OF POLICE FORCE ASSIST.

Clause 10 of Regulations of November 11th, 1890, gives power to any Inspector of Stock, Officer of Customs, or any member of the Police force, to detain and prevent the travelling of stock newly introduced into Victoria by sea or land until the regulations have been complied with. And there is a standing order that the police report forthwith to the district inspector, or Chief Inspector of Stock, any disease coming under their observation or reported to them. The police also are empowered, under section 52 of

the Health Act, 1890, to seize any animals or carcases which appear to be diseased or unfit for human consumption. The police assist us very materially in reporting cases of tuberculosis which are often reported to them quietly by the public, who do not care to write or have their names appear in any way. Through the police, then, a large number of cases of tuberculosis are disposed of which could not otherwise be done. The police also generally assist the district inspectors in shooting affected cattle and getting their carcases burned or buried.

DISTRICTS TOO LARGE.

The districts assigned to each inspector for the inspection of dairy cattle are too large and unwieldy, and the requirements of the dairying industry, which has grown so large of late years, justify closer and more regular inspection than obtains at the present time. Government supervision under central direction has been successful in the past, because there is uniformity of action in working the districts, but the same cannot be said of local government, where there is no combined action whatever. As a case in point, we have only to look to recent events in the shires of North Gippsland in the matter of rabbit suppression, the want of decision and the want of immediate action on the part of the various shires. The rabbits are now getting a strong hold of the country between Bairnsdale and Omeo, and it is only a question of a short time when the pest will be—if it is not now—thorough master of the situation. If the various shires had combined at once and got a number of inspectors and others to work in time, the evil might have been averted. In the same way are nearly all the shire councils throughout the State dallying with the supervision of the dairy stock of the State. Only some few have, or are about to appoint, inspectors to inspect the dairies and stock of two or three or more combined shires, each contributing its share of expense. If this scheme becomes general it is to be hoped that there will be closer inspection of the dairy herds, devoid of all local influences, for it is impossible for the five district inspectors now travelling the country to do more than to attend to special calls made upon them and to special cases of disease and mortality. The Government system is the right and correct one, and would be much more effective and give more decided results if more officers were in the field. And if the Government appoint more inspectors in the dairying interests there will still be plenty of work for the local authorities under the Health Act.

GENERAL QUARANTINE IMPRACTICABLE.

Unlike other infectious and contagious diseases, tuberculosis is so slow of development that it is impossible to say how many animals in a herd are affected. It was hoped when the tuberculin test was discovered that results of a satisfactory nature would be afforded the cattle-raising industry, but so far there does not seem to be any great desire on the part of Australian cattle-owners to have the test applied to their herds. The cattle that react should be dried off and fattened for slaughter, whatever the result may be when opened. The test, considered from the most favourable point of view, has its advantages and disadvantages, so that to make it a Government measure, having for its object the destruction of reacting animals, a compensation fund would certainly require to be provided, and in this matter it has been estimated that in England it would

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take £19,000,000 sterling to get rid of the disease. Three and a quarter millions of cows would require to be taken from the milking sheds and slaughtered. This is a very grave matter, and points to the necessity of other alternatives or ameliorative measures being devised. I know of no better method of gradually getting rid of tuberculosis than plenty of fresh air, sunshine, and slaughter of visibly affected beasts. The sun's rays are death to the bacillus of this disease, therefore every effort should be made by the people in the old countries to try hygienic methods for the cure of tuberculosis both in man and beast. This fact is sufficient for the local authorities to have sanitary laws enforced, the doing away with everything that tends to promote the disease, the thorough ventilation of byres, and drainage of same, the cleaning and keeping clean all cows in milk, and the utensils and gearing used in connection with the dairy.

These matters cannot be repeated too often, for it stands to reason the more fresh air we get the more vitality we have in resisting the enemy. A stock-owner has a perfect right to get rid of disease in his dairy herd in the same way as her late Majesty the Queen did in getting rid of the cows which reacted to the tuberculin test at Windsor. This is a matter which touches the pockets of owners directly, and no one can take exception to any owner attempting to purify his herd in the most effective manner he he can, and in the interests of health.

THE TUBERCULIN TEST.

The United States have not been slow in following up the discovery of Koch's tuberculin cure for consumption in the human being. The state of Vermont some years ago made experiments in regard to the test, and one of the objections taken to it was that tuberculin does not determine the stage of the disease, but condemns animals that might live for years and possibly recover. This objection seems to me a fatal one in respect to making the test a compulsory measure, and therefore it can only be a means privately of finding out the existence of tuberculosis or not. It appears, therefore, that we have yet to learn other scientific methods of a more exact nature than that disclosed by the tuberculin test. The test does not allay the progress of the disease, but on the contrary increases its severity, stirs the minutest lesions, and therefore brings to a climax the disease in a generalised form which otherwise might have lain dormant for all time to come. We have to apply preventive methods as the easiest and surest way of dealing with tuberculosis, and if the tuberculin test is not allowed in the case of the human being, why should its use be advocated determining the existence in the bovine species?

Some of the cattle-breeders of the United States and Canada have protested against the use of tuberculin as a test for pure-bred cattle being allowed to be imported, on the ground that it is "unreliable and unsatisfactory," and in the same sentence it is pointed out that it is of great use to the cattle-owner who wishes to maintain a healthy herd, but that imported stud cattle should not be subjected to the test.

As regards this exception I can only say that importers in this State of pure-bred cattle have it in their power to have their cattle tested just as they please before shipping them for foreign ports, and this has been done in one or two instances within the last two years. The quarantine of all suspected animals should be insisted on in all cases that react, with the

alternative of immediate slaughter if quarantine cannot be maintained. I have just lately heard of a stock-owner having gone to the trouble of getting his herd tuberculined professionally, and that when the animals which were put away to fatten were killed the tuberculin test proved to be satisfactory. Cases of this kind, however, I should be glad to have made official, or at any rate brought under official observation.

GLANDERS IN LONDON.

On July 30th a deputation waited upon the President of the Board of Agriculture (Mr. Hanbury) from the London County Council in reference to the increase of glanders in London. Mr. Johnson, Chairman of the Public Control Committee, and Dr. Collins addressed the President on behalf of the deputation, and pointed out that 1387 cases of the disease had been reported in London in 1900, whereas since 1895 the annual number had been fewer than 1000. During the first four months of the present year 538 cases had been reported. The chief interest, however, centered in the pathological questions of the value of mallein as a diagnostic agent and the curability of glanders by its aid. Mr. Hanbury, in his reply, refused to entertain the idea of rendering notification of glanders compulsory by veterinary surgeons. He also objected to giving further powers to the Council to deal with contact cases, and so indirectly coerce owners into employing mallein. He further expressed doubt as to whether the last word had yet been said as to the value of mallein as determining the need for slaughter, and he reminded the deputation that, following the recommendations of the last Departmental Committee on the subject, the Board had instituted a series of investigations with a view to determine authoritatively various pathological questions as to mallein in its diagnostic and therapeutic uses, and until these researches were concluded—and they would probably last another year—he was not disposed to make any fresh departures in administrative dealings with this disease. There can be little doubt that the present Glanders Orders are based upon pathological assumptions which are either obsolete or erroneous, and while the officers of the Board, in a recently issued report, commend the Glasgow authorities for their successful dealing with the disease, it is an open secret that horses which reacted to mallein are now in daily employ in Glasgow, having been reported to be cured of that which the Board of Agriculture regards as an incurable disease. Truly, as the President avers, the last word has not yet been said upon this question.

CONSUMPTION IN MILK.

Breakdown of the New Acts: an Alarming Outlook.

Two important prosecutions—the first of their kind in Liverpool—took place last March at the City Police Court, when a couple of farmers were summoned for selling milk infected with tubercle, or the bacilli of consumption. Defendants were John Lea, of Pakley, Whitchurch, Salop; and George Denson, of Picton Hall, Mickle Trafford, Cheshire: and the proceedings were instituted under Section 18 of the Liverpool Corporation

Act, 1900. Mr. E. Brassey (Chester) defended for the Cheshire Farmers' Association.

Professor Boyce, pathologist at University College, said he examined the samples of defendants' milk, and found them, by inoculating guinea-pigs, to contain a large quantity of tubercular bacilli; the cow must have been very badly diseased.

Mr. Sanders (for the Corporation): These bacilli are the germs of consumption.

Witness: Yes; and it is a notorious fact that there is a very great danger of the spread of consumption by milk.

Mr. Brassey (in cross-examination): Are you able to say that the milk must have come from a cow affected in its udder.

Witness: Not necessarily; but it must have been suffering very much from tuberculosis in one organ—the lungs, for instance.

Thereupon Mr. Brassey submitted there was no case. "You have," he said, "got to prove that my client supplied diseased milk knowingly, and how can he tell if the udder of the cow is not diseased?"

The Stipendiary: I quite see the difficulty. Of course a man cannot get inside his cow to see if it is diseased—(laughter)—but short of that, he ought to take every possible precaution.

Mr. Brassey: And that is just what we are doing. We are quite as anxious to serve the public in Liverpool and Manchester with sound milk as the health officers are to protect the public. The difficulty is that we have had our herd thoroughly examined, and can find no trace of disease.

The Stipendiary: Well, the proof of the pudding is in the eating; but (to Mr. Sanders) unless you can carry the case further it must be dismissed.

Mr. Sanders intimated that he could not, and the first case was then dismissed and the second withdrawn.

Mr. Brassey asked to be allowed to draw attention to a practice which he said prevailed in Liverpool and Manchester, in sampling the milk, but before he could specify it the Stipendiary interrupted him with a remark that the matter was one for the Health Committee, not for him.

How Manchester is Protected.

Prosecutions against two farmers for selling milk infected with consumption bacilli failed in Liverpool on March 20th, in that it could not be proved that the defendants knew of the infection. It has, in consequence, been asserted that the Milk Clauses—as they are familiarly termed—affecting Manchester and Liverpool have failed completely, and that the public are practically left without any protection against being served with milk which is infected with consumption germs. This is hardly the case. The Milk Clauses in the Manchester Act of 1899, it is true, provide that prosecutions for selling milk from a cow which is suffering from tuberculosis of the udder must be based on the knowledge of the seller that there is disease, but there are many other provisions of importance. Indeed, the best work in the way of preventing the sale of diseased milk in the city has been done altogether irrespective of this provision.

In essence the Milk Clauses are preventive rather than punitive. The medical officer or his inspector is given power to inspect any dairy from which it was suspected that tuberculosis milk is being sold in the city. If the dairy is in the city, and the medical officer is of opinion that the sale

of milk from it is likely to cause tuberculosis among consumers, the Corporation may make an order requiring the owner not to supply any milk to the city from the dairy. If the dairy is outside the city the same power can be exercised through a magistrate.

The real value of those and other minor powers can best be shown by stating the work which has actually been done in Manchester. Official reports issued by the medical officer of health show that from January to November last year thirty cows having tuberculosis of the udder were found by the veterinary surgeon—twenty-five outside the city and five within. All the cows inside the city were slaughtered. Difficulties arose in dealing with the cows outside the city, the farmers not being so generally disposed to help the city authorities. Twelve of the animals were sold and lost sight of—possibly to supply infected milk to other districts where the protection is smaller—and the other thirteen were slaughtered, two being passed as fit for food, one partially fit, and ten quite unfit. These facts indicate the chief weakness of the clauses—the absence of power to order the slaughter of all cows found to be suffering from tuberculosis of the udder. The last quarterly report of the medical officer of health, dealing with the period from October to January last year, gives considerable information in detail of the work done during the three months. The veterinary surgeon visited forty-eight farms within the city and inspected seventy-seven cow-sheds. The number of cows inspected was 451, of which three were suffering from tuberculosis of the udders, and were slaughtered. One owner was prosecuted and fined for failing to report the presence in the dairy of two cows exhibiting signs of tuberculosis in the udder. At the railway stations eighty-five samples were taken of milk brought in from the country, of which twelve were infected with tuberculosis. The diseased samples came from nine farms in Cheshire, two in Derbyshire, and one in Staffordshire. In visiting the farms five cows were found with tuberculous udders. One of these has been sold, two have been slaughtered, and two have been isolated. Four prosecutions were taken under the clauses, of which two were successful.

Of course it cannot be pretended that the Milk Clauses absolutely prevent the introduction of tuberculous milk to the city. In some respects the powers conferred are undoubtedly cumbersome, and in others they are not so strong as might be wished. But it is quite clear from the particulars given above that the clauses do not become valueless by reason of the failure of the Liverpool prosecution. On the contrary, there are means of doing preventive work, which in course of time must diminish the danger of contracting consumption by drinking the milk supplied to the city.—(*The Manchester Evening Chronicle.*)

British Congress on Tuberculosis for the Prevention of Consumption.

In continuance of our report of the Veterinary Section of the British Congress on Tuberculosis, we now present to our readers some contributions to other sections of the Congress, which have peculiar interest to our profession.

Discussion on Milk Control.

STATE SECTION.

THE ADMINISTRATION OF THE MANCHESTER MILK CLAUSES, 1899.

BY JAMES NIVEN, M.A., M.B., B.C. (CANTAB.), MEDICAL OFFICER OF HEALTH.

WITH A STATEMENT BY J. S. LLOYD, M.R.C.V.S.

"THE evidence showing that tuberculous milk has been the cause of tuberculous disease demonstrated in the bodies of children who have died from tuberculosis or other disease is, from a variety of causes, rather scanty. Some evidence has, it is true, been collected to show that there is a disproportionately large amount of primary abdominal tuberculosis in young cattle, but no demonstration has been given that this is due to milk.

"Exact post-mortem examination records show that there is an almost complete absence of tuberculous lesions in new-born infants, while the proportion of children suffering from tuberculosis lesions, abdominal and other, steadily increases with advancing months and years. Such records also show that primary abdominal tuberculosis is much more frequent in infants than in adults.

"It is open to us to infer that the food of young children and of young cattle is more liable to produce tuberculosis than the food of adults and of full-grown cattle. This is, however, only a probable conclusion.

"The conclusion is rendered much stronger by the evidence of feeding experiments, such as those made by Chauveau and Jöhne, and repeated with milk from tuberculous udders for the Royal Commission on Tuberculosis (1895) by Drs. Woodhead and Sidney Martin, who showed that the milk from tuberculous udders was virulently infective when fed to calves, kittens, pigs, and guinea-pigs.

"The Royal Commission were so much impressed by the evidence which they obtained on this subject, that they recommended, *inter alia*, that for the purpose of excluding from their districts the milk of cows affected with tuberculosis of the udder, or exhibiting clinical symptoms of the disease, Local Authorities should be given powers somewhat similar to those of Sections 24—72 of the Glasgow Police (Amendment) Act, with power to slaughter such cows, subject to compensation under the conditions named in the report.

"In 1896, 1897, and 1898 a series of examinations of the cows within the city, and of suspected farms outside the city, were made under the direction of the Medical Officer of Health by Mr. King, then veterinary surgeon of the Corporation, at first with a view to furnish evidence for the Royal Commission, and subsequently to determine the lines which administrative action should take. In this preliminary work we were under a great obligation to Mr. Holburn, the present chief veterinary surgeon of the Markets Department, as well as for subsequent assistance. Professor Delépine undertook a careful investigation of the milks obtained from suspected udders, and of the conditions to be observed in concluding that a particular milk was infectious.

"Professor Delépine had previously improved the inoculation test by showing that much increased precision was obtained by inoculating guinea-pigs in the posterior limbs.

"Out of ten samples of milk taken from indurated udders, he found by microscopic examination and the inoculation test that only five were tuberculous. From this and other observations it was concluded that veterinary observations do not suffice alone to determine whether an udder is tuberculous, and our subsequent experience amply confirms this conclusion.

"In 1897 and 1898, twenty samples taken at railway stations were found to be tuberculous by Professor Delépine, sixteen of the corresponding farms were visited by Mr. King, and on fourteen out of sixteen he found cows having

indurated udders. It was not then considered necessary to conclude the evidence by examining the milk from these udders.

"Ample evidence, however, had been secured to show that valuable results could be secured by taking advantage of the recommendation of the Commission already quoted.

"The Sanitary Committee of the city determined, in September 1898, to apply for similar powers to those enjoyed by Glasgow. As originally drafted, the Manchester Milk Clauses sought unlimited power of inspection of the cows on all farms supplying milk to Manchester, and provided for the exclusion, temporary or permanent, of milk from cows with udders affected with any disease, as well as of the milk from cows affected with advanced tuberculosis.

"Other corporations took the same course, but the opposition at first was concentrated on Manchester, and the clauses were materially curtailed before they reached Parliament. It was found impossible from the beginning to insert a clause providing for the slaughter of cows suffering from tuberculosis of the udder, or from advanced tuberculosis, though the necessity for this clause was clearly recognised.

"It was further found necessary at a town's meeting to remove advanced tuberculosis as a condition rendering the milk of a cow unfit for human food.

"The corporations applying for powers were advised by the Local Government Board that they would be much more likely to get powers from Parliament if they could agree on a common set of clauses, and Mr. Fitzgerald was requested to prepare a draft of clauses, which he did, with the aid of the Local Government Board.

"The opportunity was thus presented of inserting a clause relating to the slaughter of cows, but the absence of previous authorization was fatal to the proposal.

"The common clauses were considered by the Local Government Board, the Board of Agriculture, and the Associated Chambers of Agriculture, and in their final form presented both additions to, and diminutions of, the powers asked for by the various corporations.

"The clauses enacted in effect:—

"1. That a cow known to be suffering from tuberculosis of the udder must be isolated (and by isolation was meant isolation on the same farm), and that the milk from such cow must not be used for human food.

"2. Powers were given to inspect the cows, and to take samples of milk from particular teats, also to take samples of mixed milk produced, or sold, or intended for sale, within the city. These powers, however, can only be exercised outside the city on the production of an order of a justice having jurisdiction in the place in which the farm is situated.

"3. If the Medical Officer of Health is of opinion that tuberculosis is caused, or is likely to be caused, to persons residing in his district from consumption of the milk supplied from any dairy, the dairyman may be summoned to appear before the Corporation to show cause why an order should not be made prohibiting him from supplying milk within the city.

"4. A dairyman supplying milk within the city who has in his dairy any cow affected with, or suspected of, or exhibiting signs of tuberculosis of the udder, shall forthwith give written notice of the fact to the Medical Officer of Health of the district which he supplies, stating his name and address and the situation of the premises where the cow is.

"Unfortunately, the penalty attaching to an offence under this section must not exceed forty shillings.

"The manner in which the administration was planned out before these clauses were obtained, and in which it has still been found most convenient to administer them, is as follows:—

"Inside the city the cows are systematically examined, and if any suspicious condition of the udder is discovered by the veterinary surgeon, a sample of milk is drawn into a sterilised bottle sterilised in Professor Delépine's laboratory (full particulars being recorded), and is sent forthwith to him on the return to

the office of the veterinary surgeon. If the milk is found to be tuberculous, the cowkeeper is requested to have the cow slaughtered under veterinary inspection, and does so.

"With regard to the examination of the milk, I am indebted to Professor Delépine for the following account of his procedure :—

"Short Statement by Professor Delépine of the Method adopted by him for the Detection of Tubercle Bacilli in Milk.

"Apparatus for Collection.

"Sterilised glass bottles enclosed each in a sterilised metal case are supplied by the laboratory for purposes of collection. The bottles have a capacity of eight to ten ounces, have an indiarubber stopper to which is fixed a thermometer. Inside the case is also a sterilised metal vessel, shaped like an ordinary milk measure, which must be used to take milk out of the cans. The inspector is directed not to open the metal case, or the bottle or measure, till the moment when he wants to collect a sample.

"Collection of Mixed Milk.

"A sample taken from a milk-can in this way may be considered as a true sample, since no contamination can be introduced by the inspector.

"The inspector is also directed to record the temperature of the milk at the time of collection. This is useful for several purposes, more especially to check statements as to the time of milking. The milk in the can should be stirred up at the time of collection. Mixed milk can be obtained either at the railway station, at the dairy, or at the farm, and, as the name indicates, always contains the milk, whole or partly, of several cows.

"Collection of Unmixed Milk.

"Unmixed milk is collected direct from the cow by the Veterinary Inspector, who is directed to see before collecting a sample that the udder and his own hands are clean. When the operator is skilful he can milk the cow directly into the sterilised bottle, otherwise he is directed to milk the cow into the sterilised measure or case, from which it is at once transferred to the bottle.

"Forwarding of Samples to the Laboratory.

"The bottle is immediately tightly corked, and the case closed. If the inspector can arrange to deliver the sample at the laboratory within a few hours of the time of collection, no further precaution is needed. If the milk cannot be delivered within four hours in summer or ten hours in winter, or has to be sent by rail, the inspector is directed to place the sample in ice. Small refrigerators are supplied by the laboratory for that purpose.

"Treatment of Samples on Arrival at the Laboratory.

"Samples which arrive at the laboratory at the times prescribed—*i.e.* during working hours—are examined without delay, while those which arrive too late for examination on the same day are at once placed in the refrigerator, from which they are not removed till the time for examination.

"A Preliminary Examination.

"The temperature, reaction, and specific gravity of the milk are taken, any abnormal appearance noted, two glass tubes containing each 40 ccs. are filled with the milk which has been previously thoroughly mixed. In these tubes the milk is centrifugalized for fifteen minutes, the speed of the centrifugal machine being 3000 revolutions a minute. At the end of that time the cream has separated as a thick compact stratum, so dense that the tube can be turned upside down without any fluid escaping (except in the case of very abnormal milk). A dense sediment

"slime" has also separated, forming at the bottom of the tube a layer of various thicknesses and appearances.

"The tubes being of uniform size, the amount of cream and of sediment are roughly estimated by actual measurements. Their characters are also noted.

"The cream is then aspirated off, by means of a sterilised glass tube connected with a vacuum pump. After all the cream has been removed, the separated milk is also aspirated until there remain at the bottom of the tube only two ccs. of separated milk and the sediment. The sediment is so compact that the tube may then be inclined and the sediment fully exposed without being displaced. With a sterilised platinum loop about two milligrammes of sediment are taken and spread at once upon a cover-glass. Two such preparations are made. The rest of the sediment is mixed with the two ccs. of separated milk left in the tube, and this mixture is used for inoculation purposes.

"MICROSCOPICAL EXAMINATION.

"*Examination for Tubercle Bacilli.*—The films are fixed by heat in the usual way, then they are placed in a capsule containing a mixture of equal parts of absolute alcohol and ether, and allowed to remain in this mixture for several hours; after this the capsule is placed in hot water, so as to bring the mixture of alcohol and ether to the boiling-point. After fifteen to thirty minutes the cover-glasses are removed from the mixture, thoroughly washed with absolute alcohol, and stained by the Ziehl-Neelson method. Two such preparations are examined in connection with each sample of milk. It may be stated at once that in the course of five years' work, during which nearly two thousand samples of milk have been examined, there has been only one instance of an *acid fast* bacillus giving rise to a temporary error (which was corrected by the inoculations results). In all the other cases (about one hundred) in which tubercle bacilli were discovered microscopically, typical tuberculosis was obtained by inoculation with sediments in which the tubercle bacillus had been detected microscopically. Even in the case in which the mistake occurred, it was found, on re-examination of the specimen (after the results of the inoculation had been obtained), that the error might have been avoided, for the morphological characters of the bacillus were different from those of the tubercle bacillus. This method has been used by me since 1884, and I am convinced, after many comparative trials, that it is better than any of the other methods recommended up to this day. The microscopical method is, however, very inferior to the inoculation method for the detection of small numbers of bacilli (within a practical length of time). By the microscopical method tubercle bacilli were detected in not more than one-half of the samples which were proved by inoculation to be tuberculous.

"EXAMINATION BY INOCULATION.

"Two guinea-pigs, weighing at least eight to ten ounces, are inoculated each with the sediment of 40 ccs. of milk mixed with 2 ccs. of the separated milk. This fluid is inoculated subcutaneously on the inner side of the leg, at the level of the femoro-tibial articulation. The inoculation is made with strict aseptic precautions. When the precautions prescribed for the collection and forwarding of samples are strictly adhered to, it is exceptional for a guinea-pig to show any evidence of septic infection immediately after inoculation. (When these precautions are not adopted, over seventeen per cent. of the samples of mixed milk produce general infection, which is frequently rapidly fatal. This was proved by a preliminary investigation, the results of which have been previously recorded.) When a guinea-pig has been inoculated with milk containing many tubercle bacilli, the presence of which has been recognised by the microscopic examination, typical infection of the popliteal, superficial, and deep inguinal and usually of the sublumbar ganglia (on the side inoculated), can be recognised at the end of ten or fifteen days. After the animal has been killed, the presence of tubercle bacilli can be microscopically demonstrated in these glands, and usually also in the retro-hepatic ganglia and in the spleen. Even when bacilli are not numerous enough to be detected directly in the milk by the microscope (under the condi-

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tions described above), the superficial and deep inguinal ganglia usually contain tubercle bacilli at the end of fifteen days, *i.e.* when the animal has been inoculated with milk containing a moderate number of bacilli. When the milk contains very few bacilli it may be difficult to obtain any clear evidence of infection before the end of the fourth or fifth week. It will thus be evident that whenever milk contains a material number of bacilli, it is possible, by the inoculation method, to recognise their presence within a fortnight or three weeks. For further details see S. Delépine on 'The Value of Experimental Tuberculosis in Diagnosis' (*British Medical Journal*, September 23d, 1893); 'The Examination of Cows' Milk for the detection of Pothogenic Properties' (*Journal of Comparative Pathology and Therapeutics*, 1897).

"With regard to milk containing an extremely small number of bacilli, it is obvious that the presence of these bacilli can only be detected by using more than 40 ccs. of milk to apply the test.

"It is, however, obvious that, if a young guinea-pig, which is an animal very susceptible to tuberculosis, is not infected by bacilli obtained from about one-third of its own weight of milk when these bacilli are injected under its skin, a child would not probably be infected by a quantity of milk proportionally smaller and administered by the alimentary canal.

"I am, therefore, of opinion, that although the inoculation test as applied by me does not warrant the assumption that all samples of milk which do not give tuberculosis are absolutely free from tubercle bacilli, yet when no tuberculous infection is produced it can be safely assumed either that there are no bacilli or that the bacilli are so few that they may be disregarded from an administrative point of view.

CONTROLS.

"In the course of my work I have taken every possible opportunity to control my results by the post-mortem examination of the udders of cows, the milk of which had been found to be tuberculous or free from tuberculosis by the methods above described.

"In all cases in which tubercle bacilli had been discovered in the milk the mammary lymphatic gland was found tuberculous, and in all cases but one I have found some tuberculous lesion of the mammary gland itself. In the one exception there was interstitial mammitis of the same type as that found in typically tuberculous udders, but no typical histological tubercle or tubercle bacilli could be found. The mammary lymphatic gland was, however, affected with tuberculosis. The most frequent tuberculous lesion found in the udder was an interstitial mammitis, causing great increase of fibrous tissue and atrophy or destruction of glandular acini and ducts, typical tubercules being present only here and there. In a smaller group numerous typical miliary tubercules were found associated with patches of interstitial mammitis. In a still smaller group cheesy tubercles, some forming large groups, were found. These were also associated with interstitial mammitis. In some cases submucous tubercles, causing ulceration of the mucous membrane of the ducts, were found.

"Complete statistics of the results obtained have not yet been prepared, but the above statement is based on the examination of about forty tuberculous udders. On the other hand, some twenty udders which had not yielded tuberculous milk, although the cow was tuberculous, have been examined, and in no case was there any evidence of tuberculous lesions. It should be added that only a small proportion of the cows of which the milk was examined had previously been tested with tuberculin; all the cows so tested and which yielded tuberculous milk also reacted positively to tuberculin.

"PSEUDO-TUBERCULOSIS.

"Attention has naturally been paid to pseudo-tuberculosis in connection with this work. It is sufficient to state here that when the methods just described are carried out carefully it should be impossible to mistake pseudo-tuberculosis for tuberculosis vera.

"It will be seen that this usually entails waiting a month till the result of the

inoculation test is obtained. But in all cases with suspicious characters the cowkeeper is informed of the views of the veterinary surgeon.

"In the case of farms outside the city samples of mixed milk are taken from cans as they arrive at the railway stations or from milk-carts, and are submitted to Professor Delépine for examination. Should he declare a sample tuberculous an order is obtained from a justice, having jurisdiction in the place where the farm is situate, empowering the Medical Officer of Health, or his deputy, accompanied by the veterinary surgeon of the Corporation, to visit the farm, inspect the cows, and take samples of milk from suspected udders.

"These samples are then sent to Professor Delépine for examination, and it is upon this examination that the diagnosis of tuberculosis of the udder is decided.

"The farmer is then required to isolate the affected cow, but is advised by the Medical Officer of Health, in writing, to have her forthwith slaughtered in the presence of the veterinary surgeon of the Corporation. How far this has been successful, how far unsuccessful, will be seen by the details shown in the statement of the veterinary surgeon. In all cases the cow has been disposed of, but the manner in which this has been effected clearly indicates the necessity for a clause requiring that the affected cow shall be slaughtered under supervision.

"It will be noted that the detection of the tuberculous milk in the first instance, and the final diagnosis of the tuberculous udder, rest with the bacteriologist, and it might be supposed that the part of the veterinary surgeon is a somewhat subordinate one. This is by no means the case. The whole of the administration of these clauses, as carried out in Manchester, rests upon the assumption that, given a mixed milk proved to be tuberculous, there must be amongst the cows producing it one or more affected with tuberculosis of the udder.

"Exception might be taken to this assumption on these grounds :—

"1. That the milk may be contaminated by a consumptive person or otherwise in transit.

"2. That it might be contaminated by tuberculous dust or dirt in the cowshed, or by fouling of the udders with infected excreta, without lesions of the udders.

"3. That the milk might be infected by the presence in the cow of a generalised tuberculosis without the udder being affected.

"With regard to 1, it is an almost inconceivable occurrence with a covered can, and all cans are covered, and should be locked ; 2, is a possibility in a highly infected cowshed, especially after it has been recently swept, or if cows are suffering from tuberculous disease of the intestines, but under ordinary conditions there would not from this cause be a sufficient number of bacilli to infect the milk to the extent determined by Professor Delépine ; 3, may occur as a pathological rarity, but even then infection of the udder would have started. On the other hand it does not follow that an udder which has been invaded by tuberculosis to an extent sufficient to yield an infected mixed milk shall present any lesions to clinical examination. Of this we were well aware before the Milk Clauses came into operation.

"In one such instance, where I persuaded the cowkeeper to have his cows tested with tuberculin, the udder of one cow gave a very marked local reaction, showing the presence of disease, though no morbid condition was found on clinical examination. On this fact, and on the well-known effect of tuberculin on local lesions, especially those of tuberculosis, was based our proposed use of the tuberculin test to determine, in advanced cases of tuberculosis, the condition of udders yielding no local signs. A reaction being obtained, it still remains necessary to examine the milk from the tuberculous udder to see whether it is tuberculous.

"The objection, then, urged against inferring from a tuberculous mixed milk the fact of one or more tuberculous udders being concerned in its production, is, scientifically, of little value, and from the point of view of administration, of none at all.

"The fact that a mixed milk is tuberculous only serves to guide us in going to a particular farm, and if any flaw existed in our assumption this would mean

only that the veterinary surgeon would not in all cases find tuberculous udders corresponding to the tuberculous mixed milk.

"Moreover, it has been quite clear, both to our veterinary surgeon and myself, that the power of detecting suspicious conditions in the udder is one which admits of considerable extension by practice, even in skilled hands, and it is in this difficult task that the important *rôle* of the veterinary surgeon lies. I am quite satisfied, from the udders which have been brought by Mr. Lloyd from slaughtered cows, that definite lesions are often so diffuse as to be most difficult of detection. Hence, when he states that he has seen three instances in which lesions, previously undetectable in udders yielding tuberculous milk, make their appearance during the continuance of his observations, I am prepared to accept the conclusion that the udder may be in a pathological condition, not to be discovered merely by manipulation, but quite adequate to produce in the milk large numbers of bacilli. As a result of following up forty-seven tuberculous milks, he has found udders which were proved, by subsequent examination of the milk, to be tuberculous in thirty-one instances.

"In fifteen instances a tuberculous udder has not been found. In one instance the result is not yet determined.

"In some cases the affected cows would appear to have been removed between the taking of the mixed sample, and the subsequent visit of the veterinary surgeon to the farm. This might well happen, and by no means accidentally, but as a result of the milk being under examination. It is, therefore, highly satisfactory to find that in so high a proportion of cases the tuberculous udders have been traced. Such a result sufficiently proves our position that, given the mixed milk tuberculous, it is safe for all practical purposes to infer a tuberculous udder producing it.

"At the same time, such a source of error and of misconduct need not exist. It would suffice to check it, if all restriction on the inspection of outside farms were removed, and if an additional veterinary surgeon were appointed to carry on such direct inspection.

"In case no tuberculous udder is found, it suffices to subject the mixed milk to two or three further tests to determine whether this is due to an obscure udder condition or to some other cause. If it is due to obscurity of the diseased state of the udder, the mixed milk will continue to be tuberculous.

"In some cases the condition of the atmosphere of the cowshed and the udders of the cows should be tested in regard of their power to infect the milk under existing and under possible conditions. This I propose to have done, if possible.

"The 'Order' section of the Milk Clauses has not been used in Manchester, except in one instance, where a cowshed was grossly overcrowded and incurably dirty. Yet this section gives very extensive powers, and, possibly, it is owing to the fact that it may be used that no one has attempted to send milk from a condemned cow.

"It is quite a conceivable policy to rely on the Order Section alone, and not to send a veterinary surgeon to the farm, throwing on the farmer the *onus* of determining how his milk has become infected and of showing that he had taken effectual steps to stop the production of tuberculous milk.

"Were such a policy adopted, the farmer would be obliged to call in a veterinary surgeon at his own expense, who would give him a certificate that he had taken the steps required by the clauses. The Corporation would then satisfy themselves that the mixed milk from such dairy no longer contained tubercle bacilli and would doubtless refrain from making the Order.

"The disadvantage of such a course would be that the sanitary authority would know nothing of the conditions under which milk was being produced, and it would also be a great hardship on the farmer to take this course.

"In the case of a dairy receiving and mixing milks from a number of farms this is the only course which could be adopted.

"It is quite evident that the Order Section would be most valuable in the case of persistent infection in a mixed milk when from one or another cause the source of the infection could not be ascertained. But we have had no such cases.

"The clause requiring notification of suspicious conditions of the udder by farmers has been practically inoperative directly. These conditions are not notified and the penalty is inadequate. But indirectly it has been of some service. When an udder has been shown to be tuberculous, and a ready compliance is made with the request of the Medical Officer of Health for the slaughter of the diseased cow in the presence of the veterinary surgeon, no further action has been taken. But if the cow is removed, so that it cannot be satisfactorily traced, and if the udder has been such that notification ought to have been given, a prosecution ensues. In this roundabout manner some control is exercised over the disposal of the cows. But the penalty is inadequate, and a cow affected with tuberculosis of the udder should be forthwith slaughtered, under proper inspection, with a heavy penalty attached in case of evasion.

"I have indicated how these clauses have been carried out, and how they might be more severely administered, and the question presents itself whether their administration has been attended with a marked diminution in tuberculosis of the udder.

"If one might judge from the ferment which these clauses have excited, one would expect that a considerable and steady diminution would have occurred. The diminution has been considerable, but it has by no means been constant.

"Of the mixed milks from 401 farms taken under the Milk Clauses forty-seven have proved tuberculous, or 11·7 per cent. Of 108 samples taken at railway stations before the Milk Clauses came into operation twenty, or 18·5 per cent., were tuberculous. There has thus been an improvement in the milk samples taken at railway stations to the extent of 7 per cent., but the proportion of tuberculous udders has fluctuated considerably.

"It may be, however, that farmers supplying Manchester with milk will in future take additional precautions, and that a further improvement is only delayed.

"It was never anticipated that by these clauses tubercle bacilli would be altogether excluded from the milk supply. The fountain of tuberculous udders remains behind in the tuberculous cows and in the dark, badly ventilated, and crowded cowsheds. What was hoped, however, was that a substantial proportion of infection would be intercepted, and that the irritation generated by the discovery of tuberculous infection in the milks as they arrive in the city would turn the attention of farmers to the necessity of protecting themselves, either by systematic veterinary inspection and greater cleanliness, or by getting the tuberculin test used towards the total eradication of tuberculosis.

"It may be that we are in too much haste to gather our fruit, but I must admit that I begin to doubt whether the operation of the Milk Clauses is adequate to the entire result expected. On the other hand, one cannot but feel some degree of sympathy with farmers in hesitating to go in for entire eradication of tuberculosis, until at all events the necessary conditions are clearly understood by them. It is not sufficient to extirpate tuberculosis from a herd, as determined by the most careful application of the tuberculin test; as much care is requisite in the complete disinfection of the cowsheds, so that the herd should always be purified in summer in the first instance. It is also requisite that the cows should have adequate housing, and that the cowsheds should be at all times kept thoroughly clean. It is difficult to provide a feeding passage and fulfil the latter condition with less than 700 cubic feet of space in a cowshed with one row of cows, unless the cows are stalled two and two, when 600 cubic feet may be just made to suffice. But double stalls are a bad arrangement.

"Cows must be adequately fed. We have evidence that inadequate feeding greatly aids the spread of tuberculosis. Inadequate feeding is otherwise unprofitable, and is often due to want of knowledge.

"It is well worth considering whether a herd newly purified from tuberculosis should not be turned into a grazing field not recently used.

"Wonderful as are the results of the tuberculin test, it is not infallible, even when applied legitimately; and, supposing one or two tuberculous cows introduced into a herd housed in dark, crowded, badly ventilated and dirty cowsheds,

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the disease will spread, or else the whole of our conceptions regarding the propagation of tuberculosis are erroneous.

"If, however, the cows and cowsheds are kept rigidly clean, an odd tuberculous cow should not matter much. But this condition cannot be fulfilled with many of our existing cowsheds, and if it could, it is difficult to convey to the farm labourer a sense of its supreme importance. Nevertheless, until we are ready to adopt the measures requisite for the complete eradication of tuberculosis from dairy cattle, I agree with Professor Delépine that we shall not cease to have a certain proportion of tuberculous milks. Meantime we are content to wait for a year or two until we see how far the Milk Clauses will assist us. I would, however, urge these points :—

"1. Cows shown to suffer from tuberculosis of the udder should be required by law to be forthwith slaughtered in the presence of the veterinary surgeon employed under the Milk Clauses.

"2. All restrictions on the inspection of herds supplying the district with milk should be removed.

"3. A heavy penalty should be attached to failure tc notify suspicious conditions of the udder."

THE VETERINARY WORK DONE UNDER THE MILK CLAUSES IN MANCHESTER AND THE DIFFICULTIES MET WITH.

BY J. S. LLOYD, M.R.C.V.S., VETERINARY INSPECTOR FOR THE CITY OF SHEFFIELD, LATE VETERINARY SURGEON TO THE SANITARY COMMITTEE, CITY OF MANCHESTER.

"The Manchester Milk Clauses were put into force on January 11th, 1900. Between that date and April 30th, 1901, samples of mixed milk have been taken at the railway stations or *en route* to the city, corresponding to 401 farms. These samples have been tested for tubercular infection by Professor Delépine with the result that of the samples sent from 259 farms in Cheshire, forty-two=16·21 per cent. were tuberculous, from 41 farms in Staffordshire, one=to 2·44 per cent. was tuberculous, from 93 farms in Derbyshire, four=4·3 per cent. were tuberculous, whilst samples from five farms in Lancashire and three farms in Salop were free from tubercular infection. From figures supplied by the farmers themselves to the Public Health Office, the estimated number of cows at these 401 farms is 8408, or an average of nearly 21 cows per farm.

"The total number of farms from which tuberculous samples has been sent is thus 47=11·72 per cent. At thirty-one of those forty-seven farms, 35 cows with tuberculous udders have been found. At 15 of the farms no cows having diseased udders could be found, and subsequent control samples of the mixed milk from these farms have all been reported free from infection. At the remaining one of the forty-seven farms samples of milk from suspicious cows are still in process of examination.

"To give the percentage of cows having tuberculous udders among the cows represented on the 401 farms from which the mixed milk was tested, it will be necessary to strike out the fifteen farms at which no cows with tuberculous udders could be found, and also the one farm from which the milk from suspicious cows is still under investigation. The average number of cows will then be represented by $\frac{34}{47}$ of 8408=5545, which, taking 35 cows having tuberculous udders at the thirty-one farms, gives a percentage of 0·63.

"There have also been a large number of cows chemically examined irrespective of previous samples of mixed milk. In the Manchester cowsheds, 2182 were examined, and among them 8 cows were found to have tuberculous udders, equal to a percentage of 0·36. In cowsheds outside Manchester, 1849 were examined, without previous mixed samples of the milk being taken, and among these 9 were found to have tuberculous udders, equal to a percentage of 0·48. If we add up the number of cows thus, 5555+2182+1849, we have a grand total of 9576 cows, the milk from which was tested for tuberculosis, or among which

cows with tuberculous udders were found by chemical examination ; and by adding up the figures 35 + 8 + 9 we have a total of 52 such cows having tuberculous udders, which is equal to an average percentage of 0·54.

"According to the Agricultural Returns for 1900, the number of common heifers in milk or in calf in England, was 1,899,623. If we take 0·54 per cent. of these to have tuberculous udders, we have a total for England of 10,257 ; or if we take the figures of Great Britain on the same basis, viz. 2,620,901 at 0·54 per cent., we have a total of 14,152 with tuberculous udders.

"Against the successful working of the Milk Clauses certain difficulties have been found to arise. The first one is where, on following up a tuberculous mixed sample of milk to the farm, no cow is found exhibiting signs suspicious of tuberculosis.

"(*a*) In several instances where this has been the case the farmer has admitted selling cows from his farm between the date of inspection and the date of taking the sample. But although in a few cases he has admitted that he had sold a diseased cow, or a cow which he states has not been doing well, he has only in one instance admitted selling a cow which he knew to have a diseased udder.

"(*b*) Another possible difficulty which has been met with, is where the farmer also sells milk from his neighbours' cows mixed with the milk from his own cows. In three cases this has come under my notice. In one I failed to follow this up, but in the other two, when followed up, I failed in each instance to discover a cow with a tuberculous udder ; still this is a possible source of contamination, and should not be lost sight of.

"(*c*) Another reason given for tuberculous infection in milk is external and accidental contamination. It is possible, perhaps, that a consumptive herdsman or railway porter might infect the milk, but I think it is not probable ; and a committee, appointed by the Royal Agricultural Society of England to consider the matter, did not attach any weight to this point. Another external source of contamination has been considered by Dr. Niven, and that is, contamination by dirt and dust in the cowshed. Such would be most likely to occur when the cows and cowsheds are very dirty, and when one or more of the cows are giving off tubercle bacilli in the discharges from tuberculous intestines, or in the matter coughed up from tuberculous lungs. In these cases the presence of such a cow in the herd should not escape the notice of an observant veterinary surgeon.

"In all cases (nineteen) where I have been unable to find a cow with a diseased udder at my first visit to the farm, a control sample of the mixed milk was taken for a second bacteriological examination by Professor Delépine. In fifteen of these cases the milk was reported negative, whilst in four instances the milk was still found to be infected, thus proving that the source of infection was still present. In these cases I again visited the farm, and in three of them after a lengthy examination, both previous to and after having the whole herd milked, I have discovered a cow showing slight signs of disease about the udder, but in neither of these cows were the symptoms at all typical of tuberculosis. In each instance, however, a sample of milk from these cows was found when examined by Professor Delépine to contain tuberculous infection and to be capable of producing disease in test animals. The milk from suspicious cows on the other farm is still under investigation.

"These remarks bring to notice another reason why the cow with a diseased udder may not be found on the first visit of the veterinary surgeon to the farm, namely (*a*) the difficulty of diagnosis.

"Several authorities, including, I think, Professor Barry, have stated that a tuberculous cow can give tuberculous milk without having tuberculous disease of the udder. That is not my opinion ; I can quite conceive that a cow with an udder apparently free from tuberculous disease can give tuberculous milk, but my experience with several such cows is, that if the cows are kept under observation for a short time, one to three months, it will be found that the symptoms of the disease in the udder of the implicated cow will begin to be manifest. That has been my experience in other cases besides the above three.

"In one case, a sample from a "wasting" cow, with an apparent healthy

udder, was reported tuberculous. Five weeks later one quarter exhibited very slight symptoms, and a sample from that quarter was found to be infective, whereas the milk from the other three quarters was free from infection. I have also met with another similar case, except that after the diseased cow was milked slight hypertrophy of the udder could be detected.

"In addition to the obscure cases mentioned, the symptoms presented during life vary considerably. Whereas many of these cows are thin and far advanced with disease, others are in good condition and apparently healthy. This is also borne out by post-mortem examination, as, out of twenty-six of these cows which have been slaughtered, nine were fit for buman food, the disease being slight and localized, while seventeen were badly diseased, and were totaliy unfit for human food.

"The second difficulty met with in working the milk clauses is the failure on the part of the farmers and cowkeepers to notify to the Medical Officer of Health the presence in their dairy of a cow affected with, or suspected of, or exhibiting signs of, tuberculosis of the udder, as required by sub-section 4.

"The third difficulty is as to the disposal of eows which have been proved to have tuberculous udders. Whilst twenty-six of them have been slaughtered, the disposal of the remaining twenty-six has not been satisfactory. Eighteen have been lost sight of altogether ; as some of those were in calf, it is quite probable that they may be giving diseased milk somewhere, possibly to be consumed in Manchester. The remaining eight of the twenty-six cows are in the possession of the owners, who have isolated them, and are stated to be feeding them for slaughter."

BRITISH CONGRESS ON TUBERCULOSIS FOR THE PREVENTION OF CONSUMPTION.

COPY OF RESOLUTIONS PASSED AT THE GENERAL MEETING OF THE ABOVE CONGRESS, HELD AT QUEEN'S HALL, LONDON, ON FRIDAY, 27TH JULY 1901, AS FOLLOWS :—

1. That tuberculous sputum is the main agent for the conveyance of the virus of tuberculosis from man to man, and that indiscriminate spitting should therefore be suppressed.

2. That it is the opinion of this Congress that all public hospitals and dispensaries should present every patient suffering from phthisis with a leaflet containing instructions with regard to the prevention of consumption, and should supply and insist on the proper use of a pocket spittoon.

3. That the voluntary notification of cases of phthisis attended with tuberculous expectoration, and the increased preventive action which it has rendered practicable, has been attended by a promising measure of success, and that the extension of notification should be encouraged in all districts in which efficient sanitary administration renders it possible to adopt the consequential measures.

4. That the provision of sanatoria is an indispensable part of the measures necessary for the diminution of tuberculosis.

5. That in the opinion of this Congress, and in the light of the work that has been presented at its sittings, medical officers of health should continue to use all the powers at their disposal, and relax no effort to prevent the spread of tuberculosis by milk and meat.

6. That, in view of the doubts thrown on the identity of human and bovine tuberculosis, it is expedient that the Government be approached and requested to institute an immediate inquiry into this question, which

is of vital importance to the public health, and of great consequence to the agricultural industry.

7. That the educational work of the great national societies for the prevention of tuberculosisis is deserving of every encouragement and support. It is through their agency that a rational public opinion may be formed, the duties of public health officers made easier of performance, and such local and State legislation as may be requisite called into existence.

8. That this Congress is of opinion that a permanent international committee should be appointed—(*a*) to collect evidence and report on the measures that have been adopted for the prevention of tuberculosis in different countries; (*b*) to publish a popular statement of these measures; (*c*) to keep and publish periodically a record of scientific research in relation to tuberculosis; (*d*) to consider and recommend measures of prevention. This Congress is further of opinion that all international and great national societies whose object is the prevention of tuberculosis should be invited to co-operate.

9. That in the opinion of this Congress, overcrowding, defective ventilation, damp, and general insanitary conditions in the houses of the working classes, diminish the chance of curing consumption, and aid in predisposing to and spreading the disease.

10. That the following question be submitted for the consideration of the next Congress on tuberculosis:—The constitutional conditions of the individual which predispose to tuberculosis, and the means by which they may be modified.

11. That, while recognising the great importance of sanatoria in combating tuberculosis in all countries, the attention of Government should be directed to informing charitable and philantrophic individuals and societies of the necessity for anti-tubercular dispensaries as the best means of checking tubercular disease among the industrial and indigent classes.

HYPOSULPHITE OF SODA-POISONING.[1]

BY J. G. PARSLOW, V.S., SHENANDOAH, IOWA.

On March 19th I was called to Red Oak, Iowa, to investigate a trouble existing in a large barn of feeding horses. On my arrival I learned two had already died, and I was shown four or five that were quite sick. The symptoms, as the owner and caretaker noticed, were loss of appetite, whisking of tail, followed by light colicky pains and profuse diarrhœa, the colic gradually increasing in severity until extreme agony was evinced in the two that had died.

I examined the remainder, and found the heart action and respiration very little interfered with. Temperature from 101° to 102°. Recognising it as a dietetic trouble, I proceeded to examine the diet. The grains, hay, and water to all appearances were good. I was then shown a keg of soda hyposulphite, and was told that each horse was receiving about a teaspoonful each day. This did not strike me at first as of any importance, but I was inquisitive enough to ask if those horses would eat soda in the coarse crystal form in their feed. The fact was then shown that the soda for the

[1] Read before the Annual Meeting of the Iowa and Nebraska Veterinary Medical Association, November 20, 1900.

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entire stable was placed in a tank and water drawn on it. When dissolved the horses were let out one at a time to water. Some would refuse to drink, while others drank heartily.

My suspicions were aroused, and I set about weighing the soda and measuring the water. This done, the result was that each gallon of water was found to contain approximately eighteen and one-half drachms of soda. This was offered after each morning's feed. Figuring on four to six gallons to those horses that did drink heartily, they were receiving from four and one-half to seven ounces of soda. I could not say that that was sufficient to kill a good healthy horse, so I resorted to a post-mortem on the one that had died on the night previous.

The deviations from normal as I noticed were as follows:

Large intestines: totally devoid of blood, dark drab or slate colour, the wall rather thicker than normal, caused from submucous effusion. This effusion was like a jelly in consistency, yellowish in colour, tinged with dark drab.

Stomach: tissues normal, but contents heavily coated with black, tarry substance where it came in contact with the walls of the organ.

Spleen: totally devoid of blood, and on section it presented a beautiful dark cherry-red; stroma, tough, with a withered feeling.

Kidneys: mottled with dark-blue spots. Over each spot the capsule was markedly indentated. Underneath each spot a congested spot passed down through the cortex.

Bladder: empty, and heavily coated on lining with a milky-like secretion.

Blood: was a beautiful dark cherry colour, and feebly coagulated.

This completed the post-mortem, and I announced my findings to be that of hyposulphite soda-poisoning.

Treatment.—Remove the cause. To the worst cases I gave oleum lini. one pint, followed by light stimulants, with orders for a light laxative diet. No further loss was experienced. One or two of the worst cases convalesced slowly.

(*Journal of Comparative Medicine and Veterinary Archives*, July 1901.)

NO VET. ON BOARD.

A STORY is going the rounds that on one of the ships used by the British Government to transport horses from New Orleans to South Africa there was not a single veterinarian in charge. When many days out the officer in control was informed that a great many of the horses were running at the nose, and dark hints were dropped about the prevalence of glanders among American horses generally. The officer then made an examination, the result of which was that he ordered 270 horses, valued at more than 30,000 dols. to be cast overboard. This was done, but when the rest of the cargo reached Cape Town every one of them was running at the nose also. The remarks of the chief army veterinarian when the story was told him can better be imagined than described. Since then two veterinarians have been detailed to accompany each shipment between the points named, and no more condemnations have been ordered on account of "American glanders."—(From *North British Agriculturist.*)

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HOW TO EAT HORSE BEEF.

ACCORDING to Herr Pfluger, a German physiologist, horse beef, which has not gone out of fashion in France and other European countries as meat for men and dogs, is likely to cause intestinal troubles unless it is taken with the renal fat of sheep or oxen, at the rate of 25 grammes of fat to a kilogram of horseflesh. As foxhounds are fed on horseflesh the importance of this fact is not confined to the Continent. Dogs get thin when fed on horseflesh, roast or boiled, and because of something in the meat which is soluble and can be removed by soaking it in water. but the addition of ox or sheep fat to the beef corrects the ill-effects of toxic matter. It is also good to boil the beef in water, provided the broth is rejected as food, whether for men or dogs.

THE TRANSMISSION OF BOVINE TUBERCULOSIS TO MAN.

ACCORDING to a telegraphic message from Denver, Dr. Monson, the Dairy Commissioner for the State of Colorado, has volunteered to subject himself to the infection of animal tuberculosis with a view to settling the question whether bovine tuberculosis is transmissible to man. Dr. Monson makes as a condition of his experiment that a satisfactory annuity be provided for his family in the event of the infection being fatal. We are not informed how Dr. Monson proposes to subject himself to infection. If it is merely by swallowing tuberculous milk or meat, we take leave to point out that while fully appreciating his self-sacrificing devotion to the cause of scientific truth, and to the welfare of mankind, a negative result of such an experiment would not necessarily be a proof of Professor Koch's doctrine. Fortunately for the human race the tubercle bacillus is very often swallowed with impunity, because the conditions necessary for its development are not present *semper, ubique et, in omnibus.* Nor will Dr. Monson settle the controversy if he submits to the inoculation of infective material. If he contracts tuberculosis he will only add one case to the many instances of transmission of the disease in this manner recorded by Nocard and others. On the other hand, if the result of the experiment is negative, it cannot be held to be conclusive, for no general inference could legitimately be drawn from a single case.—(*British Medical Journal*, 17th August 1901.)

Clinical Paper.

CASE OF STRANGULATED SCROTAL HERNIA.

BY R. RUTHERFORD, F.R.C.V.S.

I HAVE had my first case of strangulated scrotal hernia in the horse since my return from India where I had many cases. Unfortunately, my services were called into requisition too late for the usual operative measures to be successful, and I only record the case on account of its rarity, and that too in a practice where the cases number several thousands.

The subject was a small, well-bred entire, with no previous disease of the parts involved.

On the evening of Monday, July 1st, on being exercised he was very

fresh, rearing and dancing about, but was quite well to all appearances when he was left for the night. In the morning he was noticed to be amiss. He was attended to by the stableman and his owner for his supposed colic up till about four o'clock in the afternoon, when I received a message to attend. I found the groom walking him about, and was at once struck with his anxious, haggard expression, and peculiar gait, slight abduction of the near hind limb, knuckling, cold sweats affecting head and neck, flank, scrotum, and thighs. Observing that he was a stallion, I at once suspected a hernia, and on examination confirmed my suspicions. The local symptoms were coldness of the left testicle, inability to retract it, and the presence of a tumour in front of the spermatic cord, between the testicle and external abdominal ring. I almost suspected a hernia of the opposite side from an examination of the parts, but the post-mortem which was subsequently made explained what was felt. The horse at the time of my examination was almost pulseless and in a dying condition, so that on stating to his owner the nature of the lesion, and that under the most favourable circumstances the only chance for such cases was an operation, I also made it plain that in this case such chance did not exist, and therefore the operation was hopeless to attempt.

He died about six o'clock very quietly, never having been in violent pain, only lying down, and occasionally turning his head to his flank and giving a half roll on his back. My son made the post-mortem examination next morning, and found a strangulated loop of small intestine in the left inguinal canal and scrotum, and some laceration of both external abdominal rings.

No doubt the lesion had its origin in the horse rearing and dancing about when out for exercise the night before.

Extracts.

A NEW PASTEURELLOSIS.

White Scour and Lung Disease in Calves in Ireland.

In a paper read before the *Societé Centrale* at Alfort M. Nocard gives an account of a recent visit to Ireland, at the invitation of the Irish Board of Agriculture. The diseases have raged for some years in the south-west of Ireland, and have caused great mortality. Breeders lose the half of the calves which they produce, the greater part dying a few days after birth, from a white frothy diarrhœa which cannot be stopped; others die eight or ten weeks later, showing symptoms of lung disease, the post-mortem revealing foci in great numbers and wide extent, caseous or suppurating, of the pulmonary parenchyma. The epizootic rages specially in the counties of Cork, Limerick, Clare, and Tipperary, but all farms are not attacked. One farmer lost 100 calves tn three yeats, another saved only one calf out of thirty-five born in 1900, another lost twenty-two out of twenty-nine, a fourth lost sixty out of seventy. The average mortality is 50 per cent. M. Nocard was accompanied in his visit to the infected district by Professor Mettam, Colonel Steel, and Mr. Ryan. His results are embodied in a letter written by him to the Board, of which the following is a summary.

White scour appears immediately after birth, and kills its victim in a few days; the evolution of the lung disease is much less rapid, and patients rarely succumb before the eighth week. The symptoms presented by the patients and the lesions presented at the post-mortem are very different,—so much so, that one is tempted to believe that the diseases have nothing in common, and are completely distinct; but it is well known in the district that the lung disease only appeared when the scour had been prevalent, and that animals cured of a slight attack of scour are almost certain to contract the lung disease. Post-mortems made by M. Nocard confirmed this opinion.

Although lung disease is rare in April, M. Nocard was fortunate enough to meet a very pronounced case, that of a calf six weeks old which had had, a few days after birth, a little passing diarrhœa, and thereafter had shown no other symptoms than *fatness*, which was unsatisfactory, a little cough, and breathlessness. The owner, however, declared it affected with lung disease, and it was slaughtered on the 10th April. There was really an enormous pulmonary lesion; the two posterior thirds of the left lung were transformed into a compact mass of considerable weight; on the surface here and there, uneven and fluctuating, the pleura was thickened, vegetating, and attached by fibrous adhesiveness to the diaphragm and the ribs. The parenchyma was the seat of intense sclerosis, and hollowed into numerous little pits, full of thick, clotted pus, of a dirty white colour, like mortar. In addition to this severe lesion there existed another much less extensive and evidently more recent; the anterior lobe of the same lung was the seat of a grey hepatisation, with little caseous foci analogous to those seen formerly on calves affected with the slow form of the scour. In all cases bacteriological examination of the alveolar exudate showed the presence of the same pathogenic microbe. If in the very acute forms of the scour the pulmonary lesions are wanting, some of them are almost always present in the subacute cases, which develop in four to six days; they are generally of small extent and prefer the form of small diffuse foci of broncho-pneumonia, of œdematous cattarhal or nodular pneumonia, or simply of atelectasia; but it is not doubtful that this is the beginning and these are the initial phases of lung disease, for we meet there also the same pathogenic microbe. After this we understand better why calves which have had scour almost certainly die of lung disease; the cure of the intestinal affection does not prevent the pulmonary lesion already constituted from continuing its evolution.

The bacteriological study of the first cases of scour observed gave somewhat discouraging results. Direct examination showed nothing clear or characteristic. All the media sown, whether liquid or solid, gave abundant cultures of very varied microbes, whether the sowing was taken from the blood of the heart or the umbilical coagulum, the pulp of the liver, of the spleen, the kidneys, or the ganglia. The microbic flora of the scour appeared very rich, much too rich to allow any useful indication to be easily obtained from it. Thus M. Nocard obtained, in addition to the coli bacillus, specimens of para-coli, para-typhic, white and yellow staphylococci, streptococci, streptothrix, or fluorescent bacillus, and a pneumobacillus liquefying the gelatine. The difficulty was to fix upon the culprit: inoculation with all of these remained without effect. On 7th April M. Nocard obtained a small part of a calf which had suffered from the scour. It was a remarkable example of fibrous arthritis. Bacteriological examina-

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tion of the exudate showed, amongst a great number of common microbes, a very small, motionless bacterium, not taking on colour easily, not coagulating milk, not growing on potato, not producing indol—belonging, in a word, to the group of microbes known under the name of Pasteurella, amongst which there are many which are pathogenic to a high degree. Cultivation on various media enabled M. Nocard to isolate a typical Pasteurella inoculation with which showed its extreme virulence. When a few drops were introduced into the peritoneum of a guinea-pig or the veins of a rabbit, death supervened in six to eighteen hours. At the post-mortem there were found intense lesions of hemorrhagic septicæmia, recalling vividly those of the acute form of scour. The microbe existed abundantly in the blood and all the viscera. A remarkable fact, and one recalling inevitably what is observed in cases of scour if the autopsy is a little delayed, was that the blood and all the parenchymata were invaded by various microbes coming from the intestines and the lungs. Cultures made from these resemble those of the scour; they are infinitely rich in microbes of all sorts, amongst which it is difficult to find the Pasteurella inoculated. This point established, the important thing was to know if this Pasteurella was really the agent of the scour, or if it was not, like the others, a microbe from the intestines capable only of provoking the articular complication observed. M. Nocard therefore resumed the study of the products gathered at the autopsy of the calves formerly slaughtered, and actually found amongst other microbes the identical Pasteurella in the heart blood and umbilical coagulum in a great many cases. In three cases of virulent scour the microbe existed almost alone in the blood of the heart and of the spleen; the liver, the ganglia, and the umbilical coagulum contained besides many other microbes. In a fourth case the exudate of a quite recent arthritis contained it alone to the exclusion of every other microbe; in the other three cases, in which the disease had developed slowly, it was necessary to multiply cultures and inoculations in order to isolate the Pasteurella from the crowd of other microbes which had invaded the blood and the parenchymata. The existence of a virulent Pasteurella in the tissues of the calves attacked by scour is therefore not an exceptional fact and one limited to the cases of articular complications; we may say it is the rule. But does it follow that this Pasteurella is the cause of scour? Its absence in a small number of cases and the co-existence of other microbes in the majority of cases throw doubt on the subject. It is, however, probable that this bacterium is really the causative agent of the disease, for it exists alone in the cases of very rapid development; and, besides, we know that Pasteurella have the power of reducing to nothing the natural defences of an organism, of bringing about its rapid invasion by common microbes, which swarm in the intestines or in the bronchi and which are generally inoffensive; finally, of disappearing rapidly when the patient resists for a time these manifold infections.

In order to set all doubts at rest, it was necessary to produce scour in a healthy calf by inoculation with a culture of this Pasteurella. M. Nocard obtained two calves; one came from a farm which was free from scour, the other had had an attack of scour and came from an affected farm—the former was one day old, the latter four weeks. On 16th April both were inoculated in the jugular. On the 17th the latter calf was quite well and lively, *and remained so;* the former gradually sank and died at 5.45 P.M. on the 17th. M. Nocard describes the post-mortem in detail; it proved that it is possible

to reproduce by inoculation the natural disease with exactly the same lesions. The experiment proves, adds M. Nocard, that a first attack followed by recovery confers immunity at least for a time, and shows that theoretically it is possible to vaccinate calves against the disease, but practically this would be very difficult, as the disease develops so rapidly that it kills calves often on the day of their birth.

M. Nocard next proceeds to discuss the manner of the infection, and concludes that it is *of umbilical origin.* But at what moment does the infection take place? Is it whilst the calf is in the uterus, or in its passage through the vagina, the mucosa of which is always foul with various microbes, or after the calf is deposited on the litter, when the severed cord is lying in contact with fæcal matter? M. Nocard thinks the last hypothesis the right one. He was present at a parturition, and says that the condition of the lyre was filthy in the extreme. The calf was allowed to sprawl about for fifteen or twenty minutes, sometimes on its belly with the end of the cord trailing in the filth. The ligature was made without any precaution whatever—no washing even—and this on one of the best farms! It would be wonderful indeed if calves escaped infection under such conditions. M. Nocard suggests a few simple precautions,—(*a*) cows about to calve should be placed and kept on clean litter; (*b*) when signs of parturition show themselves the vulva, anus, and perineum ought to be washed with a tepid solution of lysol in rain water (20 grammes of lysol to a litre of water), the vagina also ought to be washed in the same way with the same solution injected by means of a large syringe; (*c*) the calf ought to be received if possible on a clean cloth, or at least on clean fresh litter; (*d*) the cord must be tied immediately after birth with a ligature steeped in the lysol solution, and thereafter cut below the ligature; (*e*) the end of the cord and the umbilicus ought then to be brushed with a solution of iodide of potassium, after that with a solution of methylated spirit and metallic iodine, and finally, after evaporation of the alcohol, the cord and umbilicus ought to be painted over with a thick coat of collodion and iodine (1 per cent.) applied with a brush. When this is dry the calf must be left to the care of its mother.

(*Recueil Vétérinaire.*)

TUBERCULOUS MENINGITIS IN A COW, AND INFECTION OF THE FŒTUS.

Veterinary-Surgeon Thon of Frankfort states that in the month of December, whilst visiting a byre, he noticed a cow which did not look healthy. On closer examination he found that she was suffering from meningeal and pulmonary tuberculosis. There were the usual symptoms of great cerebral depression, eyes almost closed, ears hanging down, difficulty of movement from place to place, pulmonary dulness, and rattling. The animal was slaughtered next day, and a post-mortem examination made at once, when the usual lesions of pulmonary and pleural tuberculosis were found, as well as of abdominal (liver and intestines), but spleen and kidneys were normal. On opening the cranium it was noticed that the dura mater was healthy; on incision there escaped from it two tablespoonfuls of dull reddish serum.

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The cerebral hemispheres were healthy; no adherence between the dura mater and the arachnoid. Except for a slight congestion of the upper part of the cerebrum and of the cerebellum, nothing abnormal was observed. At the base of the cerebrum the pia mater was much thickened near the rachidian bulb; it was velvety, of a tint varying between pink and dirty grey, and thus somewhat resembled the appearance of the pleura or peritoneum affected by tuberculosis. In the substance of the pia mater there were seen innumerable miliary tubercles of a tint varying between yellow and red, of hard consistence, isolated or in groups of three or four at most. Similar tubercles were found at certain points where the pia mater was not infiltrated. Up to near the inter-hemispheric scissure the cerebral choroid plexus of the two lateral ventricles were also covered with innumerable tubercles, but in more compact groups.

As the cow had been pregnant, it was resolved, as a point of interest, to make a post-mortem of the calf in order to settle the question of the possibility of intra-uterine infection. The serosity of the uterus was normal, the uterine mucosa and the fœtal envelopes showed no tuberculous lesions. The fœtus was seven months' old. Peritoneum and pleura were healthy, hepatic ganglia tumefied and presenting calcareous infiltration. On the anterior face of the liver was found a calcareous tubercle of the size of a pea, and another a little smaller. The substance proper of the liver presented no tubercle. The bronchial and mediastinal ganglia were tumefied, and the bronchial showed in addition calcareous infiltration. A tubercle of the size of a pea, with calcareous infiltration, was found in the lower part of the left lung. There was nothing abnormal in the ganglia of the spleen, of the kidneys, or of the limbs. Probably infection had been conveyed direct from the mother to the fœtus by the vascular system (the ganglia of the fœtal liver being affected). This case would tend to prove that heredity of tuberculosis is possible in certain cases, even when the uterus is healthy.

(*L'Echo vétérinaire und Deutsche Thierarzt. Wochenschrift.*)

Review.

HORSES AND STABLES. By Lieut.-Gen. Sir F. FITZWYGRAM. 5th Edition.

The fact that this book has run to a fifth edition speaks for itself as to its intrinsic worth.

As the author says, this edition has been supplimented and revised in a few particulars, considerable change being made in the chapters on influenza, glanders, farcy, grease and cracked heels, and their treatment brought more in accordance with modern views. It is, however, rather late in the day to speak about pleuro-pneumonia and foot-and-mouth disease being natural to or acclimatised in own country, and *always* with us, and to decry the attempt to stamp out these diseases as useless and idle.

Needless to say, a detailed review of this work is not at this time required, its character is so widely known, and it has achieved a well-earned popularity amongst both professional men and the laity.

NATIONAL VETERINARY ASSOCIATION.

OUR readers may be surprised at our not giving a report of the Annual Meeting of the above Association, held in Edinburgh on 30th and 31st July. It is a matter of regret that we cannot do so, as the Association reserves to itself the right of publishing its papers and discussions, and those who desire to read these must become members of the Association, when they will obtain everything *in extenso.*

ARMY VETERINARY DEPARTMENT.

The London Gazette.

WAR OFFICE, PALL MALL, *July 24th.*

The King has been graciously pleased to give orders for the following promotions in recognition of the services of the undermentioned officers during the recent operations in China. Except where otherwise stated these rewards will bear date of 29th November 1900.

Brevet.

To be Veterinary-Major—Veterinary-Captain E. H. Hazelton.

WAR OFFICE, *July 30th.*

Imperial Yeomanry, Surrey. F. R. Brandt, Gent., to be Veterinary-Lieutenant.

Army Veterinary Department.

We regret to hear of the death of Veterinary-Captain H. Turnbull from abscess of the liver at Jhansi, India, on August 10th, 1901, at the age of thirty-six.

WAR OFFICE, PALL MALL, *August 20th.*

The following names appear in the list of officers brought to notice by Lord Kitchener in connection with operations in South Africa.

Veterinary Lieutenant-Colonel F. Smith, Army Veterinary Department, for his energy, tact, and unceasing good work in managing sick horse farm and hospital, and in providing mules and horses for remounts.

Veterinary-Lieutenant S. Sherlock, 4th Victoria Mounted Rifles, on June 7th, at Witman Rust, when doctor was killed, took charge of forty wounded, and by his skill and attention much alleviated suffering and danger. An excellent officer in his own department. The name does not appear in the register of the Royal College of Veterinary Surgeons of 1901.

August 26th.

Veterinary-Major Couper and Veterinary-Lieutenant Oliver arrived on sick leave from South Africa.

Veterinary-Major Crow, on retirement from the Army Veterinary Department on attaining the age of fifty-five.

WAR OFFICE, PALL MALL, *July 9th,* 1901.

Veterinary-Captain S. M. Smith resigns his commission.

CONTAGIOUS DISEASES ANIMALS ACTS, 1864 AND 1890.

SUMMARY OF RETURNS OF OUTBREAKS for the Four Weeks ending 17th August 1901.

ENGLAND AND WALES.

Swine Fever.	Anthrax.	Glanders (including Farcy).	Sheep-Scab (for month of July).
Outbreaks 205 Slaughtered 900	Outbreaks 39 Attacked 46	Outbreaks 127 Attacked 199	Outbreaks 7
SCOTLAND.			
Outbreaks 4 Slaughtered 64	Outbreaks 8 Attacked 8	Outbreaks 3 Attacked 6	None.
IRELAND.			
Outbreaks 25 Slaughtered 269	None.	None.	None.

Communications, Books, Journals, &c., Received.

Agricultural Journal (Cape of Good Hope); Berliner Thierärztliche Wochenschrift; La Clinica Veterinaria (Milan); Deutsche Thierärztliche Wochenschrift; Tannoform in Veterinary Medicine (March); The Sanitary Journal; Scottish Medical and Surgical Journal; Veterinary Record; La Riforma Veterinaria; Le Mois Scientifique (Paris); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Johns Hopkins Hospital Reports; Journal of Comparative Medicine and Veterinary Archives; Recueil de Médecine Vétérinaire; Gazette Médicale de Paris; Modern Medicine; Johns Hopkins Hospital Bulletin; Il Veterinario di Campagna (Moncalieri); Le Bulletin Vétérinaire (Orleans); Revista de Medicina Veterinaria (Bucarist); La Revista Veterinaria (Buenos Aires); Zeitschrift für Fleisch-und Milchhygiene (Berlin).